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IN CANADIAN PORTS**

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**INDUSTRIAL DEVELOPMENT  
IN CANADIAN PORTS**

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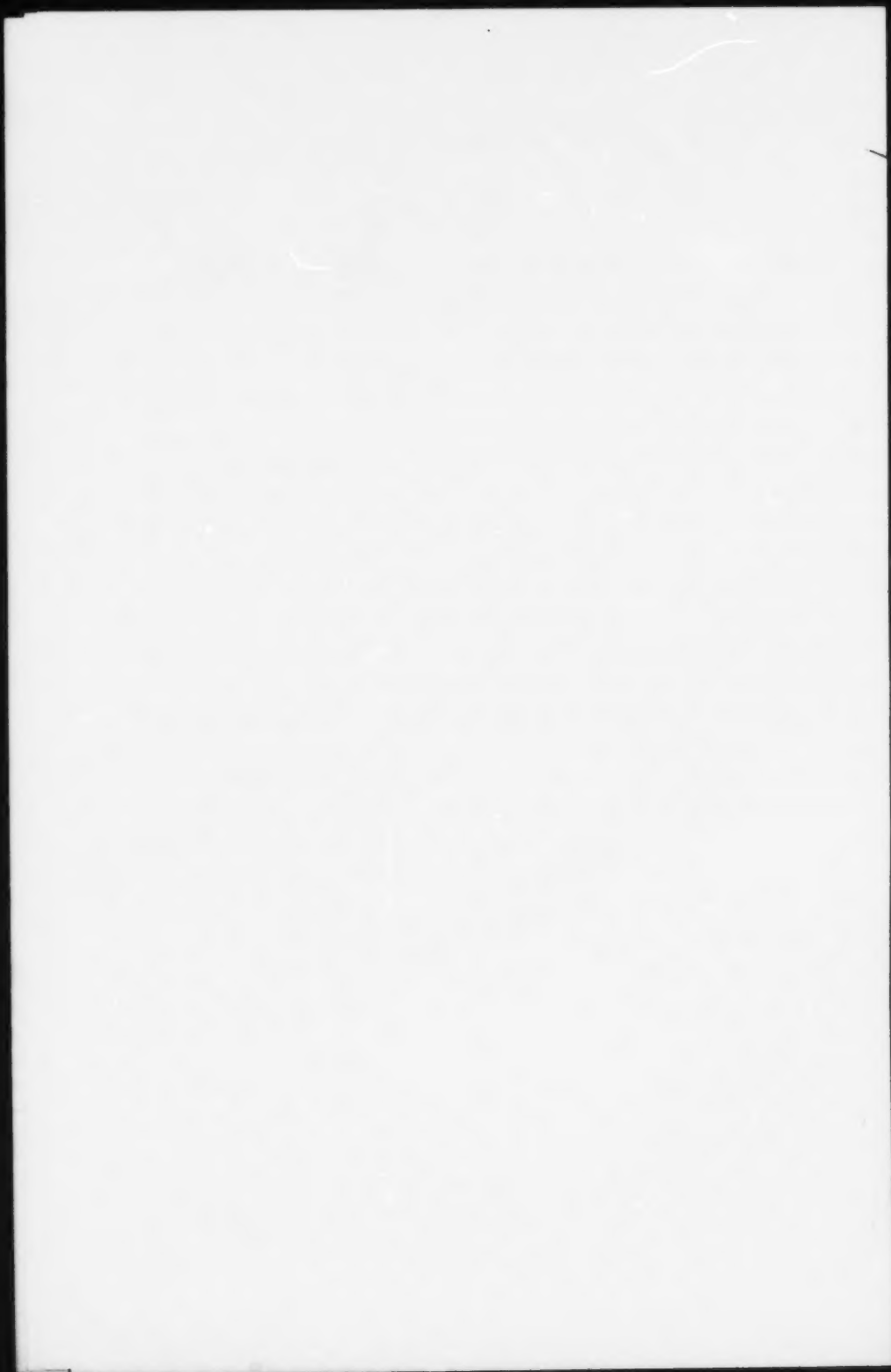
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## ABSTRACT

Canadian port industries have undergone dramatic changes in recent years. These changes are explored using a typology that distinguishes between port-related industries, and port-area industries that are not related to the port. This typology is applied to the port of Toronto to illustrate how far these structural changes have progressed. A framework is then presented which interprets the decentralisation of port industries to suburban waterfronts, and to entirely new sites, in terms of technological innovation. The factor input requirements of new port industries differ from those of old port industries in their greater use of space and capital, but reduced inputs of labour. As such, they mirror the changes occurring in industry throughout the space economy. The port of Hamilton stands out as a major exception to these trends, by still having a major industrial complex on the central waterfront. Important policy lessons are drawn from this exception. More generally, however, the characteristics of newer port industries make it increasingly difficult to use ports as an instrument in regional development policy: the case of Halifax-Dartmouth illustrates this proposition.



## Chapter 1

### INTRODUCTION AND OVERVIEW

Water transportation plays an important role in the Canadian transportation system for three main reasons. First, the Canadian economy is structurally biased towards primary industries producing bulky commodities for which water is the cheapest form of transportation. Second, the country is huge, as are the distances over which many commodities have to be transported, and this, too, favours the marine mode. And third, Canada is geographically quite well suited to water transportation: there are shorelines bordering on three oceans, while the Great Lakes-St. Lawrence system provides a navigable route almost halfway across the most densely settled part of the land mass.

Where there is water transportation, necessarily there are ports. And in these ports, historically, there were gathered along the waterfront various industries associated with the port. It is very apparent, however, that this traditional conception of a port bristling with port-related industries along the central waterfront now needs revising. Even a cursory glance at such Canadian ports as Vancouver, Toronto and Montreal shows that their central waterfronts, once dominated by warehouses, cranes and port industries, are now populated by luxury hotels, high-rise apartment buildings, office blocks, marinas and restaurants. Most of the industries connected with the port have moved to other parts of the waterfront - in the case of Montreal, downriver, while in Vancouver they have dispersed around the shores of Burrard Inlet, and to the banks of the Fraser River. Indeed some new port industries have been located even farther away at "greenfield" sites, Port Hawkesbury being an east coast example, Roberts Bank a west coast example.

It is important to stress that these changes mirror the processes of industrial decentralisation that have occurred in other parts of the city. In

the post-war era, inner city industry began to decline, while suburban industries boomed; this trend has been overtaken in the 1970s by the expansion of non-metropolitan and rural industry. Thus, although port industries obviously display a number of unique characteristics, particularly with respect to the need for access by ships, their decentralization appears to be a manifestation of a more general process.

Interestingly, this process does not appear to be universal. The steel industry still dominates Hamilton's waterfront, and there are no signs that its departure is imminent. Toronto's "Port Area" (an industrial park to the east of the harbour) is still a solid industrial area, but many of the newer enterprises locating there are not connected with the port: other locational factors are evidently at work.

The aim in this monograph is **not** to provide a detailed description of recent changes in Canadian port industries. Such an approach contributes little to an understanding of the processes at work. Besides, a factual treatment would be outdated very quickly. The approach adopted in this monograph is interpretative. The aim is to describe **in general terms** the major changes that have been occurring to industries located in Canadian ports, and to offer an explanation of those changes. This requires the selective use of illustrative examples from which we can draw generalisations and make comparisons.

## Chapter 2

### A TYPOLOGY OF INDUSTRIES LOCATED IN PORT AREAS

#### Traditional Port Industries

Until recently, the prevailing image of a port was of a place of commerce and industry, with an intermingling of ships, wharves, cranes, warehouses, factories, storage tanks, grain elevators, customs sheds and railway tracks. There are numerous literary and artistic references to this image, amongst which New York's grimy industrial port area, used in the film On The Waterfront, is a good example. Another is Fairford's description of the port of Quebec City at the turn of the century: "the whirr of wheels is heard on the streets, clouds of smoke rise from the stacks of varied industries, and the wharves and docks are alive with commerce."<sup>1</sup>

Geographers have also depicted the juxtaposition of ports and industry, though in somewhat more prosaic terms. Thus Allan Pred:

In this brief span of years (1868-1890) Goteborg's stature as a port and manufacturing centre was considerably amplified. New docks, some of them equipped with rail facilities, were constructed and the harbour was deepened to take ships with up to nine meters draft. The value of industrial output not only more than doubled, but kept pace with that of Stockholm.<sup>2</sup>

and Frank Walker:

The industrial life and development of the City of Bristol and the area immediately surrounding it is very closely linked with its function as a port, and the link of cause and effect is a two-way one. Many aspects of industry in Bristol arise from handling and processing commodities which dominate the trade of the port, whilst on the other hand many of the peculiar features of the trade of the port itself arise from the specialised industrial character of its immediate hinterland.<sup>3</sup>

This historical association of port functions with commerce and industry has been observed in London, and in numerous other ports.<sup>4</sup> In the period from the mid-nineteenth century to the Second World War, all major ports,

almost without exception, were important towns. Conversely, most major towns also had a significant port function, although there were some exceptions. Indeed for historical reasons this is still the case today, so that three-quarters of the world's one hundred largest cities listed in Kingsley Davis' World Urbanization are sea, river, or lake ports.<sup>5</sup> In a historical review of the intrametropolitan location of manufacturing industry, emphasis has to be given to the port as one of the major manufacturing places within a city. Indeed, Pred suggests that in the American case, waterfront industries formed a single cohesive entity:

The commanding position of the waterfront derived from the fact that in every colonial town the principal industries were those that had to do with shipping and the preparation of provisions or naval stores for export. Ship-building was quickly established as a vital waterfront activity in (the) seventeenth century ... Accounts ... relate the importance of rum distilling, sugar refining, and rope making.<sup>6</sup>

Broadly speaking, three types of industry were traditionally located in the port area:

- 1) those associated with the port operation itself;
- 2) those related to the ships using the port;
- 3) those based upon the cargoes passing through the port.

The presence of these three types of industry can be accounted for by different elements of location theory. Activities such as pilotage, tug operations, stevedoring and warehousing were an integral part of the port operation, hence their location was mandatory. Ship-related industries are of greater interest because they displayed some locational flexibility. Ship-building and repairing, sail and canvas making, rope making and related industries were commonly located in ports, but the relationship was not mandatory as it was for port operations. For instance, shipbuilding and ship-repairing have never been important in the port of Toronto; the main shipbuilding centre in Ontario throughout the twentieth century has been the small town of Collingwood on Georgian Bay, while the main ship-repairing yards are located in Port Weller on the Welland Canal. Despite such exceptions, up until the Second World War there was a fairly strong association between:

ports and ship-related industries that is explained fairly satisfactorily by two elements of classical location theory, namely industrial agglomeration and labour orientation. Specifically, there are obvious linkages between ports and ship-related industries that generate a range of agglomeration economies. Perhaps less obvious is the fact that shipbuilding and marine repairing are extremely labour-intensive and hence should be attracted to labour locations.<sup>7</sup>

The best theoretical explanation of the location of cargo-related industries is provided by E.M. Hoover in his discussion of industry located at transshipment points where break-of-bulk takes place. He states:

...by locating the production process at the transshipment point, the total transport costs will be minimized, since neither material nor product will then have to be shifted from ship to car. The material will use water transport only, and the product rail transport only....The principal has an obvious bearing on the strategic advantages of ports...as manufacturing centres.<sup>8</sup>

There are many studies of individual ports which describe the growth of cargo-related industries. To cite just one example, in a study of the port of New York from 1815 to 1860, Albion identifies a wide range of break-bulk industries based on the port's trade in dry goods, hardware, and wet goods, including the manufacture of: cotton and cloth; furniture; carriages; tobacco; wood products; cordage and canvas; flour; sugar; and leather.<sup>9</sup>

### **Recent Technological Developments**

With the passage of time, obvious changes took place. Steamships replaced sailing ships, larger docks and deepwater berths were constructed, improved lifting gear was installed, and refrigeration was adopted.<sup>10</sup> Nevertheless, the broad pattern of association between ports and industry did not change fundamentally from the early nineteenth century until relatively recently. The exact date which marks the beginning of the new era is difficult to pinpoint, but it is quite clear that all three types of industry traditionally present in old port areas have undergone a profound change in recent years.

Industries associated with the port operation itself are still in evidence. However, dramatic increases in vessel size have resulted in greater tonnages being handled per ship movement. For instance, even in the short period from 1967 to 1977, the average cargo tonnage loaded and unloaded per ship calling at the ports of Toronto, Montreal and Vancouver increased by 52, 80, and 140 percent, respectively, and in all Canadian ports nearly tripled.<sup>11</sup> This has reduced the demand for such support activities as pilot and tug services, there are fewer movements through lock and tidewater dock gates, and so on. Mechanisation has also drastically altered manpower/tonnage ratios. Bulk cargoes are now typically loaded and unloaded using specialised gear; indeed, on the Great Lakes, many of the bulkers are self-loading and -unloading, so that operations require virtually no longshoremen.<sup>12</sup> A similar development, SPMs (single point moorings), are described by Slack: these consist of buoys or fixed towers sited offshore, linked by submarine pipelines to the shore.<sup>13</sup> Liquid cargoes and slurries can be loaded or unloaded, and again longshore employment is minimised.

Handling general cargo was, in the past, the main source of longshore employment. The container revolution, which Wallace dates to the mid-1960s in Canada, brought about precipitous changes both in the way goods are handled and the ports involved in the trade.<sup>14</sup> Thus in the early 1960s, Halifax and Saint John were reduced to handling small amounts of general cargo following the extension of St. Lawrence winter navigation upriver to Montreal. However, with the subsequent construction of container terminals, Halifax and Saint John have recovered as major general cargo ports, although this has not created a great deal of local employment.<sup>15</sup> Containerisation and roll-on and roll-off (RoRo) technologies have focused much of Central Canada's general cargo trade on Montreal, and the two major Atlantic ports, and in so doing have deprived the port of Toronto of much of its former trade.<sup>16</sup>

Equally profound have been the changes in ship-related industries. Many traditional activities have long since disappeared from most ports.

The major changes in shipbuilding occurred in the wake of the Second World War. Western shipyards declined in a disorderly manner as the Japanese, and subsequently the Korean, shipbuilding industry went from strength to strength. To cite just one example: employment in shipbuilding in Great Britain declined at a compound negative growth rate of -2.6 percent per annum from 1954-1973, and from 1956 to 1976, employment in shipbuilding and marine engineering declined from 302,000 to 171,000.<sup>17</sup> Ship repairing was less affected, except that the launching of so much new shipping in the 1960s and 1970s led to the scrapping of numerous older vessels which had previously needed regular repair work. The upshot of these developments has been a decline in employment in ship-related industries in most ports.

No less substantial are the changes in industries associated with the cargoes passing through ports. Least affected are industries that have long been established and which are subject to considerable inertia. For instance, Hamilton is still Canada's leading steel-making town, with virtually all of its coal and ore inputs transported by ship. Sugar refining is still an important industry in the port area of Toronto. Fish-packing plants and sawmills are in evidence on the waterfront of Vancouver. Nevertheless, even these long-established industries are subject to change. In Vancouver, for example, most of the resource-based industries formerly situated on the central waterfront have relocated elsewhere on the Burrard Inlet or along the North and South Fraser River.<sup>18</sup> In Montreal there has been a general shift of port industry downriver, including the developments in the Varennes-Vercheres region.<sup>19</sup>

Aside from the secular trends of mechanisation and job elimination, three other new developments have affected cargo-related industries. Growth of vessel size has had a profound effect on the shipping industry, with the need for progressively deeper berths altering the status of many ports. Thus Halifax's magnificent harbour can only accommodate ships which draw up to 60 feet, meaning that the largest supertankers have to go elsewhere. Port Hawkesbury, 100 miles further north, can accommodate supertankers, and Gulf Oil located an oil refinery there.<sup>20</sup> Other major industrial

establishments at Port Hawkesbury include the manufacture of pulp and paper, and heavy water, a ship-repairing yard, and a thermal electric generating station which uses oil from the adjacent refinery. In terms of value added, Port Hawkesbury has become an industrial centre of regional significance. However, like many modern ports, the industries located there are very capital intensive. Direct employment in the five major establishments in 1975 was close to 1,500 which is not great given that the capital investment in these five establishments approaches one billion dollars.<sup>21</sup>

The second change is the increase in the value of land on the central waterfront. This often needs coupling with the lack of back-up space in old port areas. Montreal is a good example of this process, with port activities moving downriver in part because the berths there are deeper, and in part because of the very restricted storage space on wharves in the old port area.<sup>22</sup> The central waterfront of Toronto has likewise witnessed the progressive moving out of port industries, to be replaced by Harbourfront Park, the Harbour Castle Hilton Hotel and similar developments.

The third change in cargo-related industry is the decline in the use of ports for warehousing and related activities following containerization. Thus, whereas general cargo ports were formerly important warehousing and storage locations, the essence of a container operation is to move boxes through a port with minimal delay. The Department of Regional Economic Expansion has suggested that a major "gateway" warehousing centre be created outside Halifax.<sup>23</sup> One of the reasons for arguing (in Chapter 6) that this concept is unlikely to succeed is that its operation is inimical to the functioning of a modern container port. It would involve opening containers, and repacking them in a peripheral port located nearly one thousand miles from the centre of the North American market.<sup>24</sup>

The foregoing review has ranged widely, but it is directed to the following conclusion: that the original association between ports and industry has to a considerable degree evaporated. Some port-related industries are still to

be found in old port areas, partly for economic reasons, and partly because of locational inertia. But mechanisation and technical change have greatly reduced employment in the port operation itself; ship-related industries have waned; and while some cargo-related industries have survived, others have relocated to new sites, either downriver (in the case of many estuarine ports) or to new deepwater harbours.

Yet despite these changes, substantial concentrations of industry are still found in old port areas. This may appear to be an anachronism in view of the evident decline of traditional port industries, but new kinds of industries have moved in to replace the old.

#### **Locational Factors in the Emergence of New Port-Area Industries**

Three new types of industry have appeared in old port areas:

- 1) industries serving the local urban market
- 2) noxious industries
- 3) labour-oriented industries

Rarely do these three new types of industry use the port itself. In many instances they have simply occupied sites vacated by port industries that have either decentralised, or gone into decline. In some cases, however, new port industrial sites have been created adjacent to the waterfront in the belief that their availability would generate new port industries. Quite often, the supposed demand has turned out to be illusory, and the sites have eventually been let or sold to the new types of port-area industries which do not use port facilities. Typically these new port-area industries do not occupy sites on the central waterfront because competition for these lands from other users is now too intensive. Rather, they occupy old port areas slightly removed from the central waterfront which are neither required by old port industries, nor attractive to other land users.

The growth of industries serving the local urban market, particularly the inner city market, must be seen in the context of modern changes in

urban structure. The massive suburbanization of industry is widely recognised.<sup>25</sup> Meanwhile, white collar employment has grown at the centre of most western cities as high office blocks have sprouted skywards.<sup>26</sup> The city as a whole, and the burgeoning office industry in particular, generates demands for a variety of industries and services. Some of these industries are strongly market-oriented, and hence are optimally located close to the inner city. For obvious reasons the bid-rent for industrial sites immediately adjacent to the CBD is very high indeed, and is sufficient to deter many of these industries from locating there. But land prices and rents in older port areas that are not ripe for redevelopment tend to be considerably lower. For instance, in the case of Toronto in 1979, land in the Spadina industrial district (immediately to the west of the CBD) sold for prices in the range of \$30 to \$40 per square foot, compared to \$3 to \$8 in the Port Industrial Area which is situated roughly 2 miles from the CBD and 1 mile east of Toronto's central waterfront. Such older port areas, usually located on the fringes of the redeveloped central waterfront, therefore constitute a reasonably priced land market for industries serving the inner city.

The location of noxious industries in the port area can be explained better in terms of conflict theory than in terms of economic location theory. One of the more pertinent remarks made by Galbraith in the Age of Uncertainty is that when modern light industry is located in landscaped plants it can be visually quite appealing.<sup>27</sup> For such industries the term "industrial park" is not a misnomer; indeed the main undesirable environmental spin-off is traffic. But there remain many industries which are not at all attractive, including the majority of public utilities. Meanwhile people have become more demanding about the types of industry that they will tolerate close to residential areas. This conflict is resolved by locating noxious industries—those that are noisy, produce smoke, dust, steam and offensive smells, are dangerous or flammable, generate heavy traffic, look ugly or simply have a bad image—in areas separated from residential, commercial and recreational areas. Since port industries themselves generally fit in this category, old port areas have increasingly become a refuge for these industries.

For several decades, jobs have been suburbanising faster than residences, thereby creating the "inner city problem," with high unemployment amongst residents of the inner city. The inner city has the potential to attract certain industries employing unskilled and semiskilled labour, provided that relatively inexpensive premises are obtainable—which they generally are in the port area. To use Weber's terminology, the port area has become a labour location. Scott has recently argued that the urban labour market has an orderly spatial structure, with lowest wage rates for manual labour prevailing in the inner city.<sup>28</sup> It follows that industries requiring substantial inputs of manual labour will ceteris paribus still be attracted to a central location.

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### Chapter 3

#### AN APPLICATION OF THE TYPOLOGY: INDUSTRY IN TORONTO'S PORT AREA

The six-fold typology consisting of three types of traditional port industry, and three newer types that are located in the port area for other reasons, will be applied in this chapter to a case study of Toronto. The choice of Toronto was guided by several factors. Firstly, Toronto belongs with Montreal, Hamilton and Vancouver to a small group of important ports that have a major concentration of manufacturing industry in and around the port. This contrasts with the majority of Canadian ports in which only a few specialised industries are located. Indeed some of Canada's leading ports, Sept Iles, Port Cartier, Thunder Bay and Prince Rupert being prime examples, are little more than storage and loading depots for bulk commodities. Secondly, not only does Toronto have a large group of manufacturing industries in the port area, but their diversified nature is more indicative of the various locational forces at work than is the case of ports with a narrowly specialised industrial base. And thirdly, recent fluctuations in the port's trade and the resulting financial difficulties of the Toronto Harbour Board (which is the major landowner) have made the Board's Commissioners more amenable to allowing non-port-using industries to locate in the port area. Thus, Toronto is the most suitable port to illustrate the proposed typology.

#### The Port of Toronto

The recent history of the port of Toronto is checkered. Following the opening of the St. Lawrence Seaway in 1959, there was a modest upswing to the port's trade as ocean-going vessels entered the Great Lakes. Throughout the 1960s the total annual trade hovered around 5 1/2 million tonnes a year,

but it began to decline after 1970. As Table 1 shows, in recent years the tonnage handled has been only half the amount handled a decade ago. Indeed, in terms of gross tonnage loaded and unloaded, Toronto no longer appears amongst Canada's top twenty ports, although if emphasis is put on general cargo, then its status is a bit higher. What does, in a sense, identify Toronto as a major port is the very substantial industrial area surrounding the port amounting to some 700 acres. Traversed by the Ship Channel, and with quays along the Harbourfront, East Bayfront, and Keating Channel, approximately 12 kilometres of dockwall are potentially available for industry (Figure 1).

The analysis that follows is based on a structured interview survey of 42 establishments in three areas of the port.<sup>1</sup> The largest of these, known as the Port Area, has some 600 acres of land zoned for industrial uses. East Bayfront extends along the north side of the Inner Harbour, and has 40 acres of industrial land. To the west of this is the federally owned Harbourfront, now given over to non-industrial uses. To the west again is Fleet Street with 22 acres of land used for industry.<sup>2</sup>

Industrial development of these lands has become quite a contentious issue in the last few years. Much of the land is owned by the Toronto Harbour Board which has generally leased, but occasionally sold, land in the Port Area. In 1980, close to 100 acres of existing industrial land lay vacant. Yet at the same time options were being considered to develop a further 400 acres of land on the north side of the Outer Harbour at considerable expense. Potentially, up to 10,000 new jobs could be created if this area were developed.<sup>3</sup>

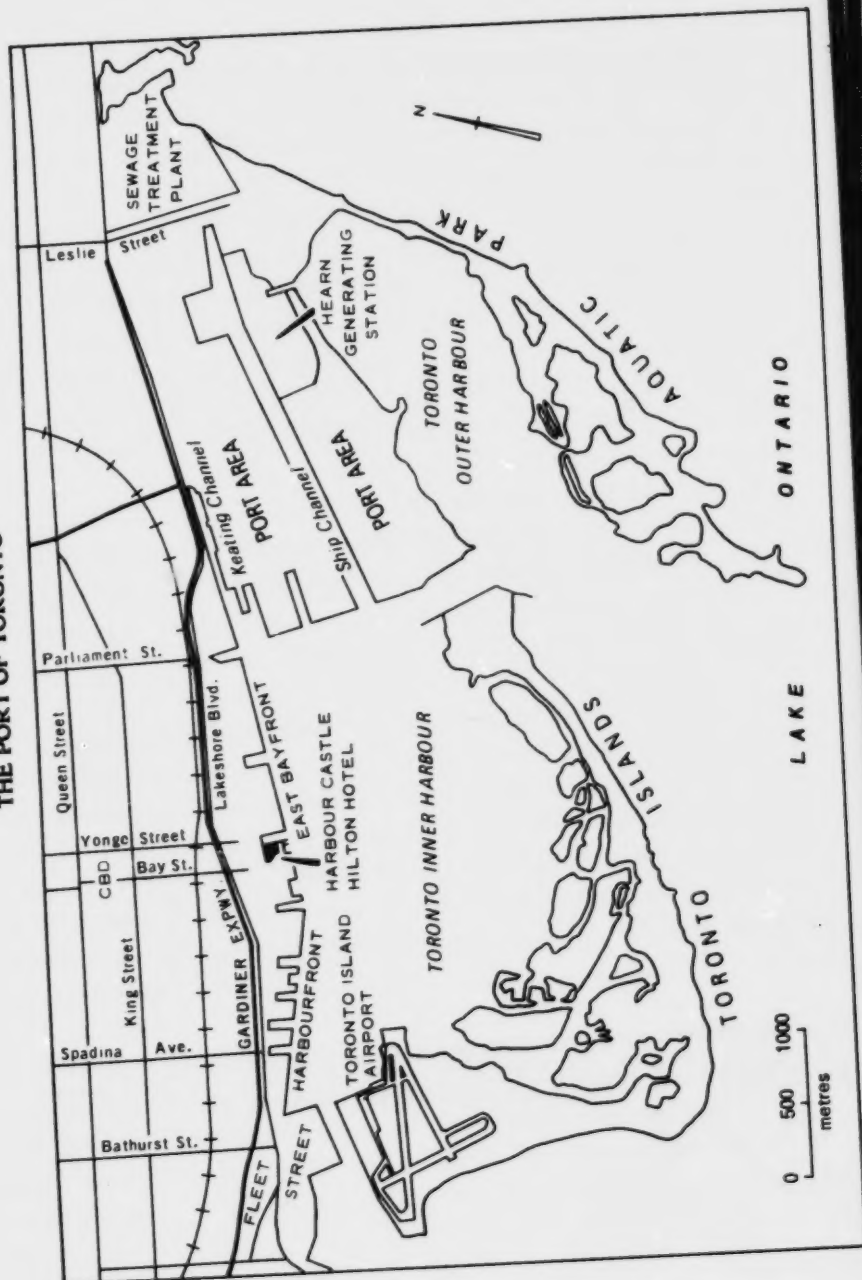
One of the central issues in the debate to develop these lands concerns what kind of industry should be located there. The Toronto Harbour Board is the dominant landowner. Given its responsibility for the port and the importance of port charges as a source of revenue, the Board of Commissioners is anxious to attract new port-using industries. It has

**Table I**  
**TOTAL CARGO HANDLED IN THE PORT OF TORONTO**  
**Selected Years**

| Year | Tonnage (metric tons) |
|------|-----------------------|
| 1957 | 4,542,486             |
| 1961 | 4,607,990             |
| 1965 | 5,507,292             |
| 1969 | 5,756,869             |
| 1973 | 3,098,694             |
| 1977 | 2,705,409             |
| 1979 | 2,472,033             |
| 1980 | 2,537,836             |
| 1981 | 2,162,568             |
| 1982 | 2,021,325             |

Sources: Statistics Canada, Shipping Report; Part II, International Seaborne Shipping (by Port); Part III, Coastwise Shipping (Ottawa: Statistics Canada 54-203 and 54-204) various years; and Toronto Harbour Board.

Figure 1  
THE PORT OF TORONTO



reservations about giving up much space to industries that do not use port facilities. The City Planning Department, in contrast, is more concerned about the loss of 78,100 industrial jobs from the City of Toronto between 1950 and 1971.<sup>4</sup> They see little future for port-related industries and their main priority is to create new industrial jobs in the city. The City Planning Department would, therefore, welcome any kind of industry, whether it is a port user or not.

### Industrial Structure in the Port Area of Toronto

The current make-up of industry in the surveyed area is given in Table 2. On the basis of interview responses, the industries were grouped into the six categories proposed in Chapter 2. Taking the categories in turn, the port operation is run by the Toronto Harbour Board, while one small firm does repair work to ships.

Cargo-related industries constitute the largest group of establishments. The main sub-group, the oil companies, are interesting because at the time of the interviews (summer, 1978) two were in the process of quitting the area. Much of the oil is now brought in by pipeline from Sarnia, although heavy fractions, such as bunker C oil, are still moved by ship. Accessibility for delivery to the regional market is also important to the oil firms, which are finding a suburban location better for purposes of distribution. Other cargo-related industries include rendering, malting, the manufacture of molasses, sugar, chemicals and cement, soy milling, and the storage of coal and salt. They occupy large sites because storage is important; they are not labour intensive, but capital costs are quite large. These, then, are the "port-related" industries, even though they do not all currently use the port. They account for over half the area occupied by industry, but only one-fifth of the jobs in the study area.

Market-oriented industries in the port area include a major truck delivery firm, printing, engineering, oil recycling, the manufacture of paper

**Table 2**  
**CHARACTERISTICS OF PORT AND PORT-AREA INDUSTRIES,**  
**TORONTO, 1978**

| Type                        | Frequency | Employment<br>Total | %    | Area<br>Occupied<br>(Acres) | Employment<br>per<br>Acre | Depreciated<br>Value Per<br>Employee<br>\$000 |
|-----------------------------|-----------|---------------------|------|-----------------------------|---------------------------|-----------------------------------------------|
| <u>Port Industries</u>      |           |                     |      |                             |                           |                                               |
| Port Operations             | 1         | 250                 | 4.2  | 120                         | 2.1                       | n/a                                           |
| Ship-Related                | 1         | 38                  | 0.6  | 5                           | 7.6                       | n/a                                           |
| Cargo-Related               | 21        | 960                 | 16.2 | 199                         | 4.8                       | 304                                           |
| <u>Port-Area Industries</u> |           |                     |      |                             |                           |                                               |
| Market-Oriented             | 8         | 1441                | 24.3 | 45                          | 32.2                      | 53                                            |
| Noxious                     | 7         | 791                 | 13.3 | 225                         | 3.5                       | 320                                           |
| Labour-Oriented             | 3         | 2458                | 41.4 | 26                          | 93.0                      | 49                                            |

Source: Interview data.

boxes and corrugated containers, pipe fitting, and steel part warehousing. These activities are comparatively labour intensive and make intensive use of space, but are not particularly capital intensive.

The noxious industries fall into two sub-groups. Utilities such as the Hearn generating station (which in recent years has used oil for fuel), Ashbridges Bay sewage treatment plant, and the Commissioner Street garbage incinerating plant use a great deal of space, create relatively few jobs, but have heavy capital overheads. On the other hand, some of the auto wreckers, scrap metal dealers and fibre-recycling operations are labour, but not capital, intensive. Overall, this group's characteristics are closer to those of the cargo-related industries.

Finally, there are three labour-oriented activities--a brewery, a tailoring firm, and a manufacturer of asphalt shingles. They account for far more jobs per unit area than any other group, but are not particularly capital intensive. They appear to have much in common with the market-oriented industries; indeed market orientation is quite important to these firms. Thus, as far as employment is concerned, "port-related" industries account for 20 percent of jobs in the port area, whereas industries not related to the port account for over three-quarters of port area employment, they use space much more efficiently than port industries, and involve smaller capital outlays.

The relative unimportance of port industries in Toronto can be illustrated in other ways. Of the 42 firms interviewed, only 17 (40 percent) make any use of marine transportation, and for some of these the use is minor. The breakdown of inputs and outputs by transportation mode is revealing (Table 3). The greatest input, by weight, is transported by pipeline with almost double the tonnage that is transported by ship. Outputs are distributed overwhelmingly by truck. The date of establishment of firms that do, and do not, use the port is also of interest (Table 4). Only one port user operating in 1978 had located in the port area in the 1970s.

**Table 3**  
**TRANSPORTATION MODE FOR INPUTS AND OUTPUTS OF INDUSTRY**  
**IN THE PORT AREA OF TORONTO, 1978**

|          | Inputs                       |             | Outputs                      |           |
|----------|------------------------------|-------------|------------------------------|-----------|
|          | Tonnage<br>(,000 short tons) | %           | Tonnage<br>(,000 short tons) | %         |
| Trucks   | 959.5                        | 18.1        | 3,919.9                      | 85.9      |
| Rail     | 497.5                        | 9.4         | 417.5                        | 9.2       |
| Ship     | 1,799.8                      | 33.9        | 223.8                        | 4.9       |
| Pipeline | <u>2,048.0</u>               | <u>38.6</u> | <u>00</u>                    | <u>00</u> |
|          | 5,304.8                      | 100.0       | 4,561.2                      | 100.0     |

**Table 4**  
**DATE OF ESTABLISHMENT AND USE OF THE PORT BY PLANTS**  
**LOCATED IN TORONTO'S PORT AREA**

|                | Year Established |       |       |       |
|----------------|------------------|-------|-------|-------|
|                | Pre-1950         | 1950s | 1960s | 1970s |
| Port Using     | 5                | 7     | 3     | 1     |
| Non-Port Using | 10*              | 5     | 3     | 5     |

\*3 of these firms were formerly port using.

This brief case study points to three main conclusions.<sup>5</sup> First, that although special local circumstances have accelerated the process in Toronto, port-related industries are generally in decline in old port areas. One of the few major facilities using water transport that has been established in the Toronto area in post-war years is the Lakeview Generating Station. This was located on the suburban waterfront, some 24 kilometres west of the city centre where the required space was available. Second, industries not related to the port are willing to occupy lands vacated by old port industries, although they are outbid by other land users for sites on the central waterfront. And third, these new industries, whether labour or market oriented, or noxious in character, are the product of contemporary locational forces operating in the inner city.

### Footnotes

1. The sample is almost fully representative. To the best of our knowledge it includes all firms operating in the study area, with the exception of 4 small firms which, for varying reasons, we were unable to interview. For fuller details, see P. Ainlay, "A Locational Analysis of Waterfront Industries in Toronto," B.A. Dissertation, Department of Geography, York University, 1978.
2. City of Toronto Planning Board, Central Waterfront Information Base Study (Toronto, 1977).
3. See: Peter Goodspeed, "City Pushing for Industrial Park on Harbor Lands," Toronto Star, 19 April 1979, p. A3, and Port Industrial Development Task Force, Final Report (Toronto, 1980).
4. The basic concerns of the city are examined in Robert C. Christie, "Developing an Industrial Policy for a Central City: A Case Study of Toronto, Canada," in Planning Industrial Development, David F. Walker (ed.) (Toronto: Wiley and Sons, 1980), pp. 255-289.
5. A more detailed discussion may be found in G.B. Norcliffe, "Industrial Change in Old Port Areas," Cahiers de Geographie du Quebec, 25 (1981), pp. 237-254.

## Chapter 4

### A FRAMEWORK FOR INTERPRETING THE CHANGES IN PORT INDUSTRY

Few people would dispute that major changes of the kind discussed above have been occurring in recent years in industries located in Canadian port areas. What is needed is a framework within which the changes can be interpreted. From the perspective adopted here, the main theoretical basis upon which the argument rests is the Heckscher-Ohlin hypothesis.

The Heckscher-Ohlin hypothesis was originally presented as an explanation of international trade, but Moroney and Walker have subsequently argued that interregional applications are more appropriate.<sup>1</sup> Recently, Scott has suggested that the hypothesis can also be applied at the intra-urban scale to account for the location of different economic activities within major urban areas.<sup>2</sup> Port industries can logically be treated in the same framework.

The essence of the argument is as follows. Different industries require different combinations of labour and capital. Some require large inputs of labour per unit output, while others make much more intensive use of capital. Concerning labour, Scott and Moffitt argue that wage rates for certain categories of labour vary in a systematic way within urban regions, being generally lower in the urban core, and higher on the urban periphery.<sup>3</sup> At the metropolitan scale, the main source of variation in the cost of capital inputs is the cost of land. Land costs at the city centre are known to be considerably higher than they are on the urban fringe.

Assuming that for any given industry there are fairly rigid technical coefficients which limit the substitution of labour for capital, and vice versa, then a logical pattern of industrial location will result. Industries which make intensive use of manual labour will be located optimally towards

the city centre, while those requiring large capital inputs in the form of extensive sites will favour a suburban location. It is also possible to incorporate locational dynamics in such a framework. Industries which experience dramatic technological changes (generally in the form of greater capital inputs which eliminate jobs) are likely to relocate to areas within the urban region where their factor input costs are minimised.

Within this framework four major processes operate, each with important consequences for industries located in port areas in Canada. These processes are:

- 1) capital intensification and job elimination by port industries
- 2) greater space consumption by port industries
- 3) land-use competition within port areas
- 4) the growth, in port areas, of industries not directly related to the port

Each of these four processes will be examined in turn.

#### **Capital Intensification and Job Elimination**

The Canadian economy differs from most Western European economies in that resource industries are strongly represented, but manufacturing is rather weakly developed.<sup>4</sup> Indeed the importance of staple exports to overseas markets led Harold Innis to propound a staple-export theory of economic growth to explain Canada's development history.<sup>5</sup> Canada still exports large amounts of staples, including grain, iron ore, coal, potash, forest products, fish products and a wide range of minerals. It follows that Canada's ports handle large volumes of these commodities (Table 5).

Historically, port activities were labour intensive, although this tendency was probably less marked in Canada because of the emphasis on staple exports. Nowadays, Canadian port operations are remarkable for the few jobs created in handling very large volumes of cargo. Take, for instance, Canada's first and third leading ports in 1977, Sept-Îles and Port

**Table 5**  
**INTERNATIONAL SEABORNE SHIPMENTS (BY COMMODITY)**  
**LOADED AT CANADIAN PORTS IN 1975, 1976, AND 1977**  
**(Million Tonnes)**

|                       | 1975         | 1976         | 1977         |
|-----------------------|--------------|--------------|--------------|
| Iron Ore              | 36.6         | 45.9         | 44.3         |
| Wheat                 | 13.3         | 11.6         | 16.3         |
| Bituminous Coal       | 10.6         | 9.8          | 9.9          |
| Other Grain           | 5.3          | 6.8          | 5.1          |
| Lumber and Timber     | 2.7          | 4.3          | 5.1          |
| Gypsum                | 3.8          | 4.1          | 4.9          |
| Pulp                  | 2.5          | 3.2          | 3.2          |
| Newsprint             | 2.3          | 2.7          | 2.9          |
| Fuel Oil              | 3.9          | 2.4          | 2.6          |
| Sulphur               | 1.8          | 2.2          | 2.6          |
| Containerised Freight | 2.1          | 2.8          | 3.2          |
| Other Commodities     | <u>17.5</u>  | <u>19.0</u>  | <u>19.7</u>  |
| <b>Total</b>          | <b>102.4</b> | <b>114.8</b> | <b>119.8</b> |

Source: Statistics Canada, Shipping Report, Part V, Origin and Destination for Selected Commodities 1976 and 1977, 54-207.

Cartier (places referred to in the text are shown on Figure 2). Both are iron-ore ports, while grain is also transshipped at Port Cartier. Despite the huge volumes of ore handled (Table 6), the two towns are quite small with populations (in 1976) of 30,617 and 8,139 respectively. The same relationship is replicated in numerous bulk terminals throughout Canada. Thus many ports have grain elevators looming large on the waterfront, with the largest in Thunder Bay and Vancouver handling 11.4 and 6.5 million tonnes of grain, respectively, in 1977. However, direct elevator employment averages around one job per 150,000 tonnes loaded per annum. The same general relationship emerges for almost every bulk cargo that is handled. The gypsum terminals at Hantsport, Halifax and Port Hawkesbury, the sulphur and potash terminals on Burrard Inlet, and the coal terminals at Roberts Bank, Hamilton, North Vancouver, and the \$70 million McKellar Island Terminal in Thunder Bay are all highly mechanised capital-intensive operations. Indeed, in some instances the process has gone even further. On the Great Lakes, bulk cargoes used to be transported by 'bulkers', like all lake boats instantly recognisable by their shape (designed to the maximum capacity of the Poe and Welland locks). Many bulkers have been replaced by 'self-unloaders', which eliminate the need for shore-based equipment entirely, with drastic reductions in longshore employment.<sup>6</sup>

The point has been made that Canada exports many unprocessed staple products. This trade creates little employment: the only associated port activities are unloading, loading and storing the products. There are, however, a number of major port manufacturing industries based on bulk cargoes, including oil refining, wood and pulp industries, the iron and steel industry, and electricity generation. Not surprisingly, these are capital-intensive operations.

A few facts will serve to illustrate the point. Of the two oil refineries in Halifax-Dartmouth, the smaller Texaco refinery has a capacity of 20,000 barrels a day and 140 employees, the larger Imperial refinery a capacity of 85,000 barrels a day and 275 employees. The Gulf oil refinery in Port

LOCAL MAPS OF CANADIAN PORTS

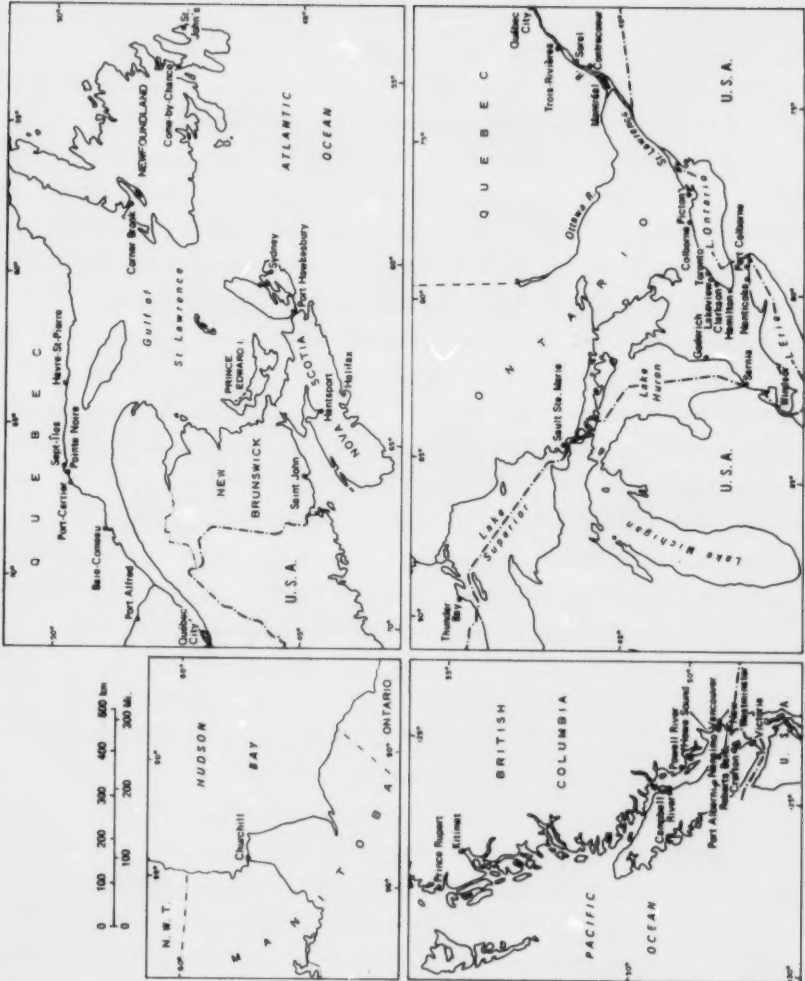


**Table 6**  
**CANADA'S LEADING PORTS, 1977**

| Rank |                       | Millions of Tonnes<br>Loaded and Unloaded |
|------|-----------------------|-------------------------------------------|
| 1    | Sept-Iles/Point Noire | 32.0                                      |
| 2    | Vancouver *           | 29.7                                      |
| 3    | Port Cartier          | 21.7                                      |
| 4    | Thunder Bay           | 19.7                                      |
| 5    | Montreal              | 16.8                                      |
| 6    | Hamilton              | 12.0                                      |
| 7    | Halifax               | 11.1                                      |
| 8    | Saint John            | 10.2                                      |
| 9    | Quebec City           | 8.7                                       |
| 10   | Sarnia                | 8.0                                       |

\*Includes Roberts Bank, but excludes New Westminster.

Source: Statistics Canada, Shipping Report, Part II, International Seaborne Shipping (by Port), 1977, 54-203, and Shipping Report, Part III, Coastwise Shipping, 1977, 54-204.

Hawkesbury (which is currently mothballed) represents a \$105 million investment, but creates only 240 direct jobs (this implies a capital investment of nearly \$500,000 per job created). The oil-powered Tufts Cove generating station in Dartmouth is the largest in the Maritime provinces, with a nameplate rating of 350 megawatts, and a depreciated capital value (in 1978) of \$60 million, but only ninety-three employees.

The forest-product and the iron and steel industries are the two largest employers amongst Canadian port industries. Forest product industries dominate the British Columbia economy, with total employment in the wood, pulp and paper industries now approaching 55,000. Labour productivity (measured in board feet per employee) has remained stationary in sawmilling for the last two decades, mainly because overcutting of accessible coastal timber resources has reduced the size of trees being cut, and has led to the development of less accessible interior forests.<sup>7</sup> However, for other branches of the forest-products industry, including pulp and paper, plywood and veneers, capital/labour substitution has been occurring so that output has increased much faster than employment. Hamilton is Canada's largest steel town, with employment in the two dominant firms, Stelco and Dofasco, totalling 27,000. Other major steel towns include Sault Ste. Marie (Algoma), Sydney (Cisco), Contrecoeur (Sidbec-Dosco) and Sorel. Again, there is evidence of a deepening of capital in recent years.

General cargo operations have experienced a dramatic shift to capital-intensive methods in the last decade due to the containerisation of a large proportion of the break-bulk general cargo trade. Halifax's first container terminal (HALTERM) is a good example. Opened in 1969, the two-berth facility cost \$23 million. The 250 longshoremen employed directly at the terminal currently handle about 1.7 million tonnes of container traffic a year.<sup>8</sup> Thus capital investment approached \$100,000 per employee, and has created one direct job for every 7,000 tonnes of container traffic. The second Halifax container terminal at Fairview Cove came into operation in 1981. Its construction costs were estimated at \$31 million and an additional

\$10 million of equipment was needed, making it even more costly than Halterm.

Statistics contained in a study of manpower on the Halifax waterfront make it possible to estimate the job elimination caused by containerisation.<sup>9</sup> They are given in Table 7. The projected container tonnage for 1976 proved to be optimistic (the actual tonnage reached 1.8 million metric tonnes in 1977) but the following general trends are evident. Superficially, it appears that a 120 percent increase in traffic is associated with a 23 percent decline in employment, indicating a threefold increase in labour productivity. However, this is an underestimate since the break-bulk figures include cars moved at Autoport (in effect as neo-bulk) and RO-RO traffic which has more in common with container traffic than with true break-bulk cargo. Since both Autoport traffic and RO-RO movements formed only a small part of the 1971 break-bulk figure, a comparison of the 1971 break-bulk traffic with container traffic in the same year is instructive. If we equate 'regular' employment with the container terminal, and 'casual' employment with break-bulk, then labour productivity (measured in tons moved per man year) increased roughly tenfold with containerisation.

There is strong evidence of widespread substitution of capital for labour in many Canadian ports in recent years. Thus, in terms of the Heckscher-Ohlin hypothesis, many port industries have ceased to be labour-intensive activities. It follows that despite its superior access to the urban labour market, the central waterfront no longer holds the same attraction for port industries. Meanwhile, the restructuring of port industries has generally led to the adoption of new capital-intensive methods which require greater space to operate efficiently.

### **Greater Space Consumption by Port Industries**

The suburbanisation of industry has been occurring almost universally during the last two decades. Port industries, too, have been affected by this

**Table 7**  
**JOB ELIMINATION IN LONGSHORE EMPLOYMENT IN**  
**HALIFAX FOLLOWING CONTAINERISATION**

|                                                  | 1971           | 1976<br>(figures projected) |
|--------------------------------------------------|----------------|-----------------------------|
| <u>GENERAL CARGO MOVEMENT</u><br>(Metric Tonnes) |                |                             |
| Break Bulk*                                      | 493,509        | 544,311                     |
| Container                                        | <u>630,494</u> | <u>1,932,306</u>            |
| Total                                            | 1,124,003      | 2,476,617                   |
| <u>LONGSHORE EMPLOYMENT</u>                      |                |                             |
| Casual                                           | 601            | 280                         |
| Regular                                          | <u>91</u>      | <u>255</u>                  |
| Total                                            | 692            | 535                         |

\*Break-bulk figures include RO-RO and Autoport.

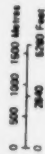
Source: Dougall (1974)

process. Most new port industries have been located away from the central waterfront, either at suburban waterfront sites or even further away at greenfield sites. Meanwhile, some long-established port industries have been experiencing land-use competition from non-industrial uses and, lacking space to expand, have also sought new waterfront sites. This question of space requirements will be considered initially for industries associated with bulk and neo-bulk movements, and then for those associated with general-cargo movements.

The most basic activity associated with bulk cargoes is the loading, unloading and storage of those cargoes. Strung along the Canadian Atlantic, Great Lakes and Pacific coastlines are ports that exclusively handle one, at most a few, bulk cargoes. Many are small ports where low land costs make it possible for the industries involved to have large storage areas at no great expense. Of course, there are also bulk terminals located in major ports. In this respect it is instructive to examine the location and space consumption of the four oil refineries in the Maritime provinces. The three older refineries are to be found in established ports, one in Saint John and two in Halifax, but they are located away from the central waterfront. The Irving refinery in Saint John lies to the east of the city where it is served by a pipeline from the Irving Wharf on Courtenay Bay. The two Halifax refineries occupy waterfront sites of approximately 600 acres (Imperial) and 160 acres (Texaco) in Dartmouth, well removed from the central waterfront (Figure 3). The fourth and newest refinery is the Gulf Oil refinery at Port Hawkesbury which began operation in 1971. The setting is comparable in many ways to Milford Haven in West Wales: the oil terminal berth has a depth of 100 feet and can accommodate supertankers up to 326,000 dwt.<sup>10</sup> This superb harbour was undeniably an important locational factor for Gulf Oil, but space availability was also a subsidiary consideration since they acquired a greenfield site of over 2000 acres.

There are some parallels in the growth of Nanticoke on Lake Erie during the 1970s. Three major developments were located at this greenfield

### Figure 3



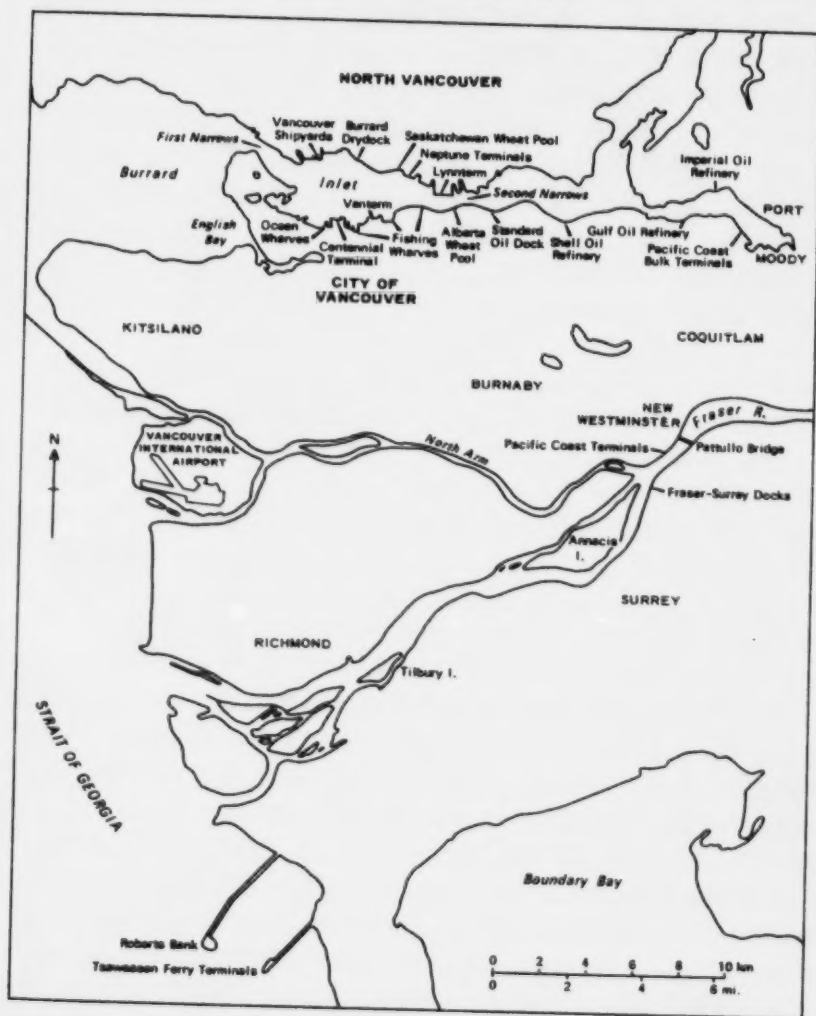
site. Lacking space to expand, the largest steel maker in Hamilton (Stelco) decided to build blast furnaces and a cold strip mill at Nanticoke, costing \$1.2 billion; after 1983 a \$365 million hot rolling mill will be added. Adjacent to the steel plant is a Texaco oil refinery, and an electricity generating plant fired (currently) by U.S. coal. All three occupy spacious waterfront sites with the added advantage, unlike Hamilton, of being above the Welland Canal on the Great Lakes navigation system.

Another illustration is provided by Toronto. Generating stations using bulk coal or oil have become major waterfront industries. Until the late 1950s Toronto's main generating station was the Hearn plant located on a 50-acre site in the port industrial area, about 2 km from the central waterfront (Figure 1). The need for further capacity led to the decision not to enlarge the Hearn station because, even though some spare land was available, there was not enough for the very large stockpiles of coal that would be needed by a larger plant. Instead, a new generating station was constructed on a 120-acre greenfield site on an old rifle-range at Lakeview, 24 km west of the city centre. The main space requirement was to stockpile sufficient coal to maintain operations for the four peak-generating months in winter when the Great Lakes are closed to navigation.

Current developments in the port of Vancouver reflect the importance of space for port industries. Bulk-handling operations are absent from the central waterfront: they are distributed wherever flat waterfront land is available around Burrard Inlet, forming a series of terminals handling coal, potash, phosphate rock, sulphur, oil, grain, asbestos and fertilisers, each terminal occupying up to 200 acres (Figure 4). Particularly important is the new Lynnterm, a bulk and neo-bulk terminal located near the Second Narrows Bridge; it has 90 acres of quay space, created in part by land reclamation.

The Roberts Bank terminal, some 32 km south of Vancouver deserves mention in this context. Constructed in the 1970s, it consists of a causeway

Figure 4  
THE PORT OF VANCOUVER



5 km long with a 50-acre coal storage pad at the end, and has the advantage of a navigable depth of 65 feet at low water (Burrard Inlet has a navigable depth of up to 40 feet at all stages of the tide and can accommodate large vessels, but not vessels in the supertanker range). Metallurgical coal mined in eastern British Columbia is brought to the pad in unit trains which are unloaded while in motion. Space for storage was an important consideration in constructing the coal terminal, and environmental hearings are underway to examine proposals to add up to four new pads to Roberts Bank, each one being about 50 acres. Even larger is the 236-acre McKellar Island terminal in Thunder Bay, which now handles about 3 million tonnes of eastbound Alberta coal each year.

It is not only bulk-cargo operations that have become big space consumers: a similar trend is evident in general cargo-handling operations. By and large the actual manufacturing of the general cargo does not take place on the waterfront, hence it is the stevedoring and storage of general cargo which is the main port-related activity. Space consumption has increased greatly in recent years, especially at container terminals. Indeed, in this respect it could be argued that containers convert general cargo into bulk cargo.

In 1979, Canada's busiest single container facility was Halterm at the extreme southern end of the waterfront in Halifax, with two berths and a 56-acre site, which was partly reclaimed from the foreshore. A second Halifax container terminal was opened in 1981 at Fairview Cove on wholly reclaimed land. The first phase occupies 50 acres, but with planned later phases it could ultimately occupy a site more than twice as large as Halterm (Figure 3). A similar pattern has emerged with Brunterm in Saint John; with the facility at Batteries de Beauport in Quebec City; with the Racine, Task and Manchester Liner terminals in Montreal; and with Vancouver's Vanterm and Centennial terminals. These spacious container ports are, in most instances, located a little away from the central waterfront. The congested wharves and warehouses on the central waterfront formerly used for break-

bulk general cargo operations were generally not suitable for conversion to container operations. Current developments on the Fraser River provide a good illustration of this point. Until recently, the main general cargo operation was handled at the Pacific Coast Terminals, which occupied much of the central waterfront of New Westminster (Figure 4). This terminal originally had eleven berths but only 35 acres of back-up land. The new Fraser Surrey Dock has only six berths, but 170 acres of land, which represents an almost tenfold increase in land area per berth.<sup>11</sup> Meanwhile the old Pacific Coast Terminals are being redeveloped for residential, commercial, and office uses. A comparable pattern is emerging in Quebec City. "In the case of Wolfe's Cove terminal, lack of land area prohibits any meaningful expansion of rail and other landward facilities, thereby limiting expansion of the cargo-handling capacity of this terminal."<sup>12</sup> Port expansion is to occur at the Batteries de Beauport where the navigable depth is the same as at Wolfe's Cove; the difference will be greater back-up space for storage which is necessary for Quebec's current growth as a major bulk transshipment port.

Not unrelated to the greater consumption of space by modern port industries is the question of greater navigable depth. Large modern ships need deepwater berths. The question may therefore arise as to whether the need for deepwater navigation should be identified as a major factor in the relocation of Canadian port industry. The issue is confused by the fact that a move to a new large site often coincides with a shift to deeper water so that both factors appear to operate. For instance, both interpretations could be applied to the movement of port industry downriver in Montreal, following the scheme outlined in Bird's Anyport model, and to the proposal to build a superport on the south shore of the lower St. Lawrence at Gros Cacouna.<sup>13</sup> However, although deepwater harbours are important in some instances, particularly for bulk oil movements, the attraction of large sites more commonly appears to be the key factor. Part of the argument rests on the fact that many Canadian ports are located in harbours with good navigable depths (Halifax and Vancouver being outstanding examples) so that

there is often no need to relocate to gain deepwater navigation. Also, the question has not arisen on the Great Lakes-St. Lawrence Seaway system, because vessels are restricted to a shallow draught.

Evidence from Greater Vancouver also supports the argument that space requirements are crucial. Steed reports on a continuing process of industry leaving the central waterfront area on Burrard Inlet and False Creek for the Main Arm and, for some fish-packing and wood industries, the North Arm of the Fraser River (Figure 4).<sup>14</sup> This trend still continues, although the Burrard Inlet has a navigable depth of between 40 and 50 feet at low water at most berths, whereas the Main Arm of the Fraser has only 33 feet on a 12-foot tide, and the North Arm, which has a navigable depth of 10 feet, is used only for log tows and chipwood scows. The availability of large waterfront sites on the Fraser River downriver from New Westminster is evidently the overriding locational factor. Revetments and other retaining walls are being built to increase the navigable depth on the Fraser to 40 feet, but that is *ex post facto*. It is being done not so much to accommodate larger vessels, but to permit ship movements at all stages of the tide.

#### **Land-Use Competition Within Port Areas**

Historically, port-related activities dominated the waterfront of port cities. This was reflected in the wharves, shipyards, docks, cranes, transit sheds, grain elevators and bonded warehouses which formed a waterfront ribbon. With few exceptions, land use along the central waterfront was overwhelmingly given over to activities that related directly to the port function.

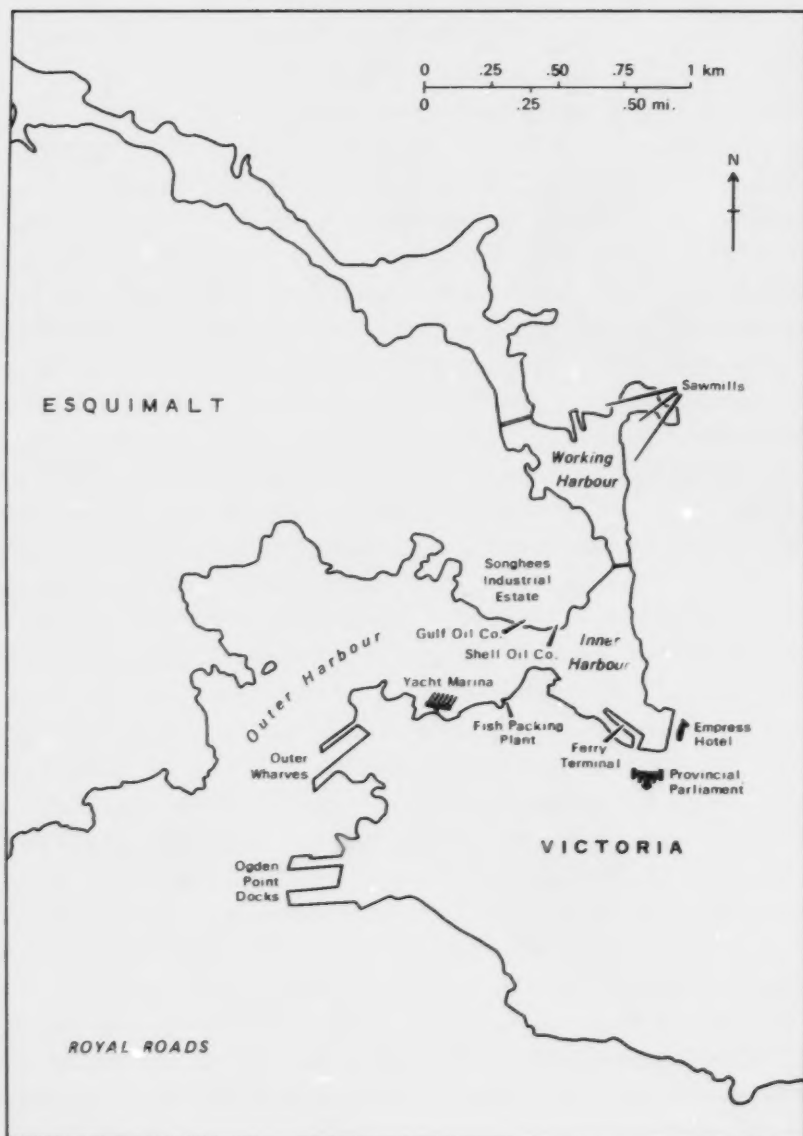
Two developments tended to reinforce this pattern. First, ports were provided with rail access. As the network of rail lines enveloped the waterfront, so they became a barrier making it difficult for people to enter the waterfront zone. Second, security and safety became a concern so that

citizens were excluded from cargo-handling areas. The net effect, as Merrens has argued, was increasingly to separate the average citizen from the urban waterfront.<sup>15</sup> Putting dates on this pattern of development is not easy. We know, for instance, that considerable use was made of the central waterfront for recreational purposes in Victorian Toronto, and that this use became less evident during the first half of the twentieth century. The point is that structure and function went hand in hand. Thus the exclusion of citizens from the central waterfront area is intimately connected with the disappearance of land uses not related to the port.

Recently there has been a quite dramatic reversal of this process with Canadian port cities, following a trend which apparently began in some American ports. Port-related activities now face increasing competition from other activities, so that land on the central waterfront is being switched from port-related to recreational, institutional, commercial and residential uses.<sup>16</sup> Evidence of this reversal can be found in all of Canada's major ports, although the process has gone much further in some than in others. In Victoria, for example, major changes are underway, particularly with a view to attracting tourists. Until recently the provincial parliament buildings and the Empress Hotel faced an Inner Harbour lined with sawmills, transit sheds, warehouses, oil storage tanks, fish-packing plants, a paint manufacturer and the Songhees industrial estate.<sup>17</sup> Today, one finds an underwater peep-show of a giant octopus, local cruise boats, marinas, waterfront hotels and apartment complexes: and there is the probability that the Songhees estate will soon be converted from industrial to residential and commercial uses. Only the ferry terminals and a fish-packing plant remain, presumably because they are compatible with the tourist industry. Away from the central waterfront, which is equivalent to the Inner Harbour, port industries survive: upstream in the Working Harbour, and downstream in the Outer Harbour (Figure 5).

Although the subject of an extended planning review, less change is evident on the Vancouver waterfront because of jurisdictional and land

Figure 5  
THE PORT OF VICTORIA



ownership problems. However, general transit sheds on the central waterfront of Burrard Inlet have been closed to make way for office developments, pleasure boats have taken over Coal Harbour, and in 1979 the wreckers closed a boatyard on Coal Harbour to make room for a major addition to the Bayshore Inn. Much industry has moved out of False Creek, to be replaced by several marinas, a housing development and the residential/commercial Granville Island development. And major changes are underway on the Central waterfront with the commencement, in March 1983, of the construction of the large Canada Place development. Construction on a nearby site of the World Trade Centre complex will soon begin.

In recent years industry has been almost totally excluded from the central waterfront of Toronto. In 1972 the federal government created Harbourfront, a 90-acre waterfront 'park', which involved purchasing a major warehouse, a large malting operation, and a variety of smaller port industries (Figure 1). This 'park' includes recreational, commercial, office and residential land uses, but port industries are being progressively phased out. An exclusive apartment complex, the Harbour Castle Hilton Hotel, and a conference centre occupy strategic positions at the southward extension of the Central Business District. Fairly similar developments have taken place in Montreal.<sup>18</sup> Less change has occurred in Hamilton, mainly because two large steel firms own most of the waterfront land and therefore can exclude competition. Nevertheless, some recreational uses have moved in to the shallower parts of the western inner harbour.

The changes in Halifax are especially interesting. Old warehouses have been converted into the picturesque Historic Properties, with its mix of restaurants and gift shops catering mainly to the tourist trade.<sup>19</sup> The old finger-pier section (Figure 3) has been cleared of fish canneries and warehouses; the provincial law courts, an institutional use, now occupy part of this site, and the rest lies vacant awaiting conversion to residential and commercial uses, including a major hotel.

A variety of influences account for the success of non-industrial land uses in competing with port industries for central waterfront land. Both push and pull factors are involved. Port industries are being increasingly attracted to non-central locations because of the greater space requirements discussed above. Meanwhile, changes in urban lifestyles and tastes have led other users to infiltrate the central waterfront. Greater disposable incomes and more leisure time have led to the rapid growth of recreational uses. In all ports, but particularly on the west coast, pleasure boats have proliferated. Other activities, including jogging, swimming, roller-skating, and simply strolling, have all become established waterfront pastimes. Most port cities have modified their official plans in recognition of this fact. Some public housing has appeared on the waterfront, while houseboats have recently become popular in Vancouver. But most residential developments serve upper-income groups, and the age distribution tends to be bimodal: there are younger people with an interest in water-related pastimes, and older, often retired, people (proportionally the fastest growing age-group in Canada). Commercial uses seem to have followed the infiltration of other activities. They include activities serving people engaged in water-related sports, but the largest operations are pleasure parks, hotel and restaurant ventures (floating restaurants seem to have become a mandatory feature of all central waterfronts). These are geared to serve the tourist market as much as local residents.

#### **Growth of Industries not Directly Related to the Port**

Reference was made earlier to the growth of industries that do not make use of the port in port areas. This development will now be interpreted in the Heckscher-Ohlin framework.

Yeates has described the axis that lies between Windsor and Quebec City as 'Main Street'.<sup>20</sup> This region constitutes the Canadian industrial heartland, and accounts for almost three-quarters of Canadian manufacturing employment. The remainder of the Canadian space economy, the hinter-

land, tends to specialise in agriculture and resource industries. This heartland/hinterland dichotomy has implications for the growth in port areas of industries not related to the port.

The case has been argued that greater space requirements have tended to drive many modern port industries away from the central waterfront, to be replaced by a variety of land uses including, in some instances, other industries not directly related to the port. This has occurred to a much greater extent in the industrial heartland, in part because of the larger local demand for industrial land. On the whole, these newer industries have not been able to bid competitively for land at the very centre of the waterfront (land prices are too high), but they can often compete for waterfront land slightly removed from the central waterfront. These lands have much in common with the zone of transition surrounding the Central Business District, and often are occupied by older, somewhat dilapidated structures.

These new non-port industries are most in evidence in the port of Toronto, and have been described in Chapter 3. To a degree, Toronto is a special case in that: the Toronto Harbour Board owns most of the 600-acre estate known as the 'Port Area', and has excluded non-industrial uses; the volume of port traffic has been declining in recent years, and this has precipitated the decline of port-related industries;<sup>21</sup> and the City Planning Department has been actively directing certain non-port industries to the Port Area. Nevertheless, the same trends are evident in a number of other ports, and it is felt that the above factors have merely served to speed up the process in Toronto.

Industries in the market-oriented group are attracted by proximity to the inner-city market, and by land prices and rents which are much lower than in the area surrounding the CBD. Typically land prices in the CBD are from 5 to 10 times as high as land in neighbouring old industrial and port areas (an example was given in Chapter 3).

Noxious industries form an interesting group because they tend to be noxious in different ways. Car-wrecking yards are ugly and, if they have crushing equipment, noisy as well. Many Canadian ports have wreckers and scrapyards on their waterfront, although only a few of the establishments make use of water transportation. Rending plants and glue factories are noted for their pungent smells. Those that are long established often began by using water transport, but many have since switched to using road and rail transportation. Sewage-treatment plants have become prominent features on many Canadian urban waterfronts, although they are notably absent from Montreal and Halifax, where raw sewage is deposited in the harbour. In Toronto the City Planning Department is making a conscious effort to segregate noxious industries as far as possible from residential areas. They have decided to concentrate recycling industries in the port industrial area for three reasons. First, they are compatible with existing port industries. Second, this effectively segregates them from residential areas. And third, the location is fairly central.

Labour-oriented industries on the waterfront are attracted by reasonably priced industrial land and by accessibility to labour (often immigrant groups) living close to the city centre. If Scott is correct, the wage levels paid in the inner city are lower than suburban wage levels. This kind of industry is mainly in evidence in the metropolises (Toronto, Montreal and Vancouver) which are the main reception centres for immigrants. Typically these industries are big employers, are not very capital intensive, and make fairly efficient use of space.

### Summary

The adoption of a wide range of technological changes in port activities and port industries has led to a fundamental restructuring of their operations in the last 25 years. This restructuring has drastically altered their factor input requirements: it has necessitated large-scale capital investment, and in so doing has eliminated many jobs. These new

technologies have also required much larger inputs of space, precipitating a shift to suburban and "greenfield" waterfront sites. Simultaneously, other land uses, including commercial, residential, recreational, and institutional uses, have infiltrated the central waterfront. Indeed it could be argued that, in effect, the central business district now reaches the central waterfront in Canada's three largest cities. At other less valuable sites vacated by old port industries (these are usually located a little away from the central waterfront), the vacuum has been filled by a new generation of industries that do not use the port, but which are attracted by the inner city market, or the local work force, or are noxious and need to be separated from residential areas.

In the two chapters that follow, the discussion turns to policy issues. The major contention, following from the above argument, is that it has become increasingly difficult to use ports as an instrument in regional employment policy. This will be examined in Chapter 6, using Halifax-Dartmouth as a case study. But first, there are important lessons to be learned from the special case of Hamilton, the one major port in Canada where long-established port industries still reign supreme on the central waterfront. An explanation will be offered as to why Hamilton's steel industry still thrives in the port area. If correct, this explanation points to an alternative to the enterprise zone policies being used in the United Kingdom and the United States to rehabilitate inner city areas.

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## Chapter 5

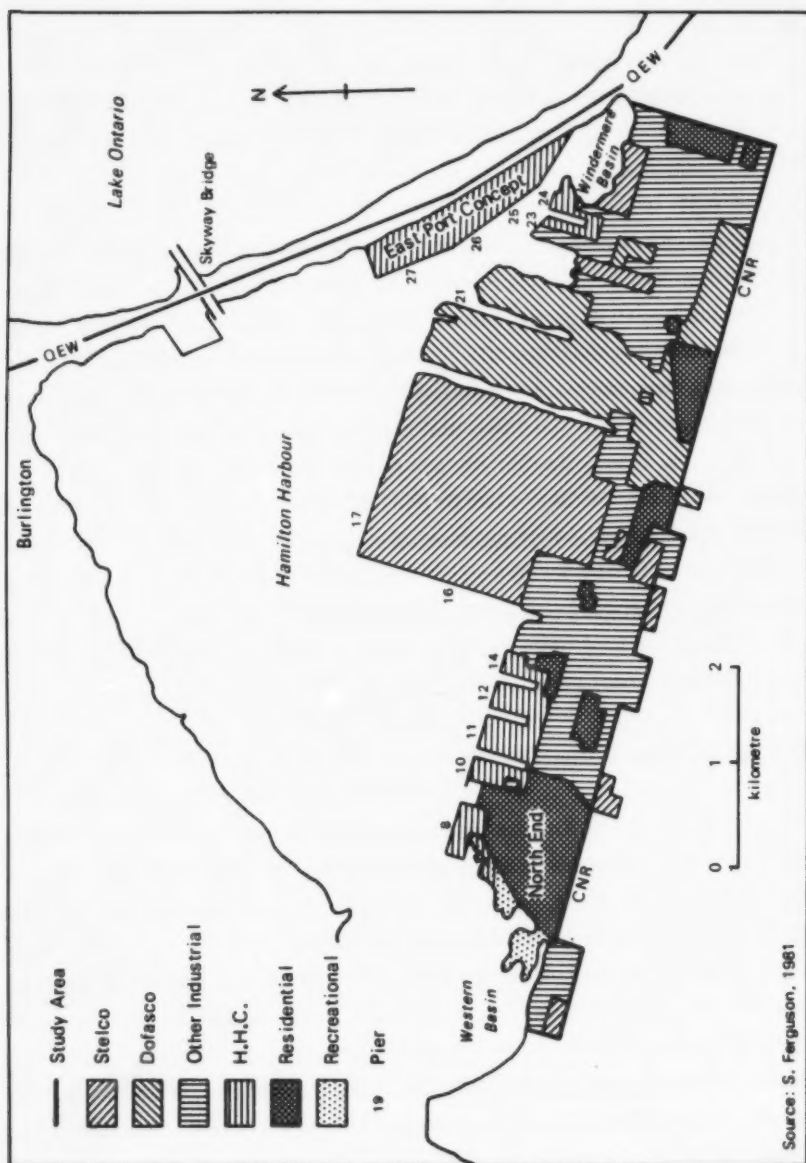
### **HAMILTON'S INDUSTRIAL CENTRAL WATERFRONT: A MAJOR EXCEPTION TO RECENT TRENDS**

Amongst Canada's leading ports, the pattern of industrial development in Hamilton has been exceptional. This port has a unique history of almost continuous industrial growth so that manufacturing is still the overwhelmingly dominant activity on the central waterfront. Over the last 70 years, Hamilton's two major steel producers have succeeded in absorbing adjacent industrial and residential land, and reclaiming land from the harbour, in a way that few inner city manufacturers have been able to (Figure 6). As a result, Hamilton has not experienced the inner city problem of declining industrial employment in the acute form that has become so common elsewhere. Traditional port industries (and those linked to them in the steel-making industrial complex) continue to flourish on Hamilton's waterfront, so that alternative land users have not been able to infiltrate on a large scale as they have in most other major ports.

#### **The Development of Hamilton's Bayfront Industrial Area**

Until the 1970s, Dundas was the location of the local port, whereupon Hamilton took over as a small gateway port of only local significance. Although located on a protected harbour at the western end of Lake Ontario, its hinterland was hemmed in to the north by the much larger hinterland of Toronto, and to the south by those of small ports on the north shore of Lake Erie. However, in the last three decades of the nineteenth century, the pace of development was accelerated by the establishment of the local iron and steel industry. Between 1871 and 1911, Hamilton's population increased from 26,717 to 86,969, while employment in manufacturing almost quadrupled from 4,436 to 21,149.<sup>1</sup> This pattern of growth was maintained through much of the twentieth century so that by the 1981 census,

Figure 6  
HAMILTON'S BAYFRONT INDUSTRIAL AREA



the population of the metropolitan area was close to 550,000, making Hamilton the eighth largest metropolis in Canada. This expansion is attributable very largely to the growth of manufacturing. Hamilton is neither a centre of government nor, historically, a major regional service centre, but amongst Canada's leading cities it is the most heavily specialised in manufacturing.<sup>2</sup>

The history of Hamilton's growth is clearly a complex story. For present purposes, three key elements in this record will be identified. First, the city itself played a major role in sponsoring the early growth of the iron and steel industry. Second, the industry subsequently grasped the nettle, being both enterprising and innovative in its management. And third, the two major steel firms grew to such an extent that the fortunes of the city became inextricably wound up in the success of these companies. Such became the economic and political dominance of these two firms that the political system generally acquiesced to their wishes.

The City of Hamilton played a decisive role in fostering the growth of the iron and steel industry.

The roots of the modern complex (in Hamilton) go back to the building of a blast furnace in 1895, followed by a steel mill two years later. These decisions were influenced to a large extent by the local council's generosity in providing a free site for the plant, a long-term exemption from local taxes, and a cash payment if expansion proceeded at a determined rate.<sup>3</sup>

It would appear, however, that this was not an act of spontaneous generosity as much as an inducement negotiated by a firm that was prepared to consider alternative locations:

When one looks at the major reason for the location of the blast furnace in Hamilton in [1895], however, it is found that a considerable inducement was needed by the City Council. It provided a free site plus a \$40,000 bonus. Moreover, Toronto may well have developed a blast furnace some years earlier had it been prepared to offer inducements. It was complained in 1892 that Toronto refused to give a free site for a proposed furnace.<sup>4</sup>

Initially, the industry consisted of a number of small iron and steel works, linked forward to various metal-working, fabricating and engineering firms. This atomistic structure was decisively changed in 1907 when six firms amalgamated to form the Steel Company of Canada (Stelco), which instantly became Canada's largest integrated steelworks. In 1917, Dominion Foundries and Steel (Dofasco) was founded, although it did not become a fully integrated works until 1951. From such beginnings, these two steel corporations grew to make Hamilton Canada's dominant steel-producing centre.

The city fathers of Hamilton had hopes that their city would indeed become Canada's main steel-producing centre and (more practically) that the incentives they offered would subsequently be repaid in municipal taxes. That these hopes were realised is in no small part due to the efforts of the two major companies, which were both entrepreneurial and innovative. For instance, Stelco assured its lines of coal supply by purchasing outright, or a part interest in, coal mines in West Virginia and Pennsylvania.<sup>5</sup> Also, prior to the 1960s when the main iron ore supplies were to the west of Lake Superior, Stelco built up extensive interests in iron mines in Minnesota and was innovative in constructing a taconite pelletizing plant (to concentrate ores and reduce transportation costs) at Aurora in Minnesota. When it became evident in the 1950s that alternative ore supplies would soon be needed, Stelco took a lead in developing ore bodies in eastern Quebec and Labrador. Meanwhile, Dofasco developed an ore mine at Temagami in Northern Ontario. Dofasco has also been a technical leader, particularly in 1957, when it was the first steel producer in North America to replace the open hearth method with Brassert's oxygen furnace, which was more fuel efficient, produced higher quality steel, and was faster. During that period, Dofasco increased its share of Canadian capacity from 9.5 per cent in 1951 to 13.6 percent in 1957 (and 18.2 percent in 1966). By 1978, Dofasco's output of crude steel was 3.2 million tonnes, and Stelco's 5.0 million tonnes, out of a Canadian total of 14.6 million tonnes.

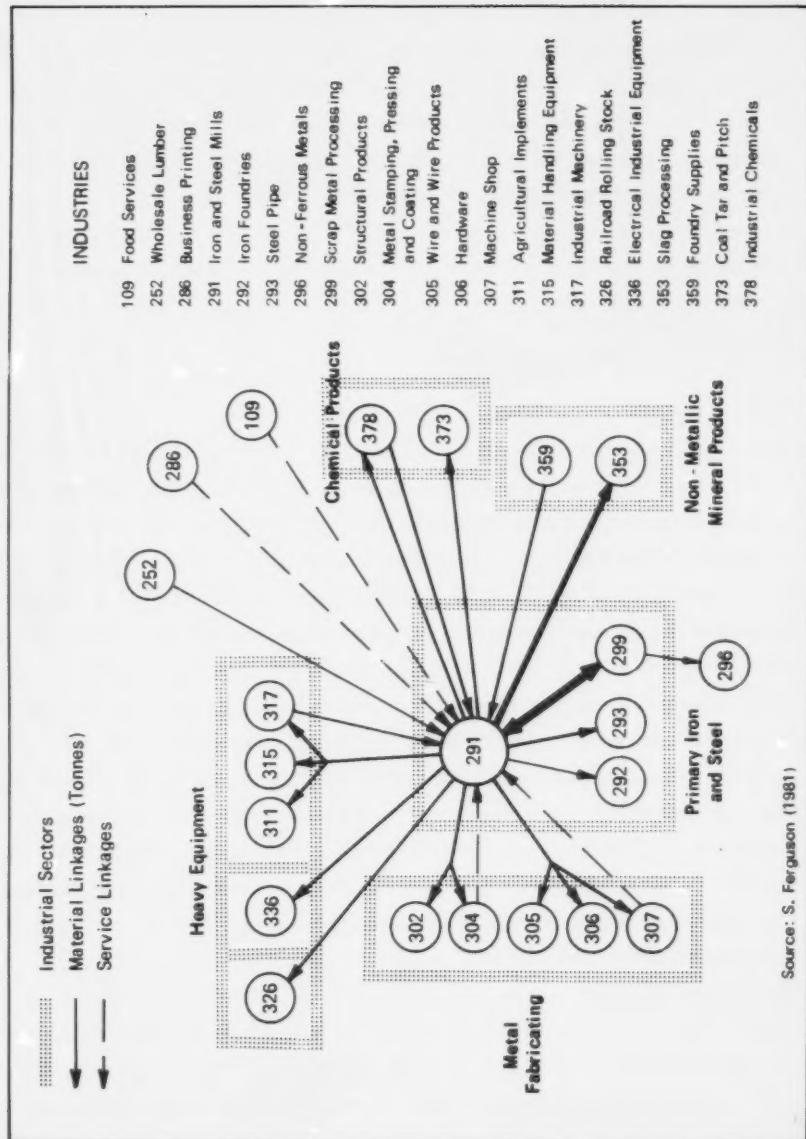
Today, nearly 60 percent of Canada's domestic steel output is produced in Hamilton by these two firms. Thus even in Canadian terms they are capable of exerting an oligopolistic influence. Within the City of Hamilton they exert an even greater influence. Of a total employment in the Hamilton Bayfront area of 45,632 in 1979, Stelco and Dofasco accounted for 26,695 (58.5 percent). Similarly, they dominate the Bayfront area by property size and industrial floor space (Figure 6). They own 1700 acres (70 percent of the industrially zoned land), and have over 13 million square feet of industrial floor space (which is over 50 percent of the total).

In practice these figures understate the importance of Stelco and Dofasco to the Hamilton economy. The local steel and metal working complex, which is undoubtedly the most fully developed industrial complex in Canada, is almost wholly dependent upon these two primary iron and steel producers. Bator and Walker identify the three main groups of steel-using industries belonging to the metal fabricating group as: (a) hardware, tool and cutlery production; (b) wire and wire products; and (c) metal stamping, coating and pressing.<sup>6</sup> However, as Figure 7 shows, a broader total set of manufacturing activities are involved, including inputs of chemicals and foundry supplies, outputs to the non-metallic minerals and heavy equipment industries, as well as various service linkages. Thus, a great deal of the total industrial activity in Hamilton is, and has for much of this century been, dependent upon and derivative to the two complex-forming basic steel producers. It follows that when it comes to decision-making as it affects Hamilton—and the Bayfront area in particular—the wishes of these two steel companies command considerable respect.

### **The Role of the Port**

It has been argued in previous chapters that the local multiplier effects of ports have declined very substantially in recent years. Many industries formerly located on the central waterfront have dispersed to suburban locations, and even to greenfield port sites. Those few port

Figure 7  
HAMILTON'S BAYFRONT AREA METAL COMPLEX



industries that remain, such as the handling of general cargo, have been mechanised and containerised, with wholesale job elimination as a result.<sup>7</sup> Thus throughout North America there has been a dramatic decline in the amount of employment in the inner city that is attributable to the port and to port-related industries.

Hamilton has resisted these trends so that the traditional symbiosis between port and industry is still manifest. The port has certainly thrived, and in recent years has ranked sixth in Canada with the volume of tonnage handled rising from 5.3 million tonnes in 1952 to 14.9 million tonnes in 1979 (with the economic downturn, this declined to 10.7 million tonnes in 1981 and 8.6 million tonnes in 1982). Are there, then, special features associated with the port of Hamilton which account for the survival of traditional port-related industries in the Bayfront area? Possible lines of explanation include the substantial growth of cargo tonnage handled, and lack of suitable sites for decentralisation. However, neither of these lines of argument is convincing.

Certainly, the growth of tonnage handled is not sufficient reason to account for the healthy state of industry on the central waterfront. Similar increases have taken place in Montreal and Vancouver, yet in these ports industries have nevertheless progressively deserted the central waterfront. Meanwhile, newer ports have come to the fore, most notably Sept Iles and Port Cartier, in which the large volumes of cargo handled have generated remarkably little port industry. Since Hamilton's shipping has generally conformed with Canadian trends, an explanation of its anomalous waterfront development must lie elsewhere.

Equally, Hamilton's steel-makers have not lacked opportunities to relocate to other port locations. Dofasco owns a large site at Port Burwell on Lake Erie which could be developed as a port if they so desired; Stelco has already exercised its options at Nanticoke. The steel industry could also have been relocated to a number of sites on the littoral of Lake Ontario.

Given the present sources of iron ore (in Labrador) and coal (in Pennsylvania), lake shipping is, and under present pricing structures will remain, the cheapest form of transport. The steel industry should, therefore, still be optimally located in a port. However, this need not restrict the industry to its historical location in central Hamilton. No doubt an element of inertia is involved in its remaining there, since the cost of constructing new harbour facilities elsewhere would be substantial. But this has not prevented the construction of new harbours in other cases - for instance, at Lakeview (for a thermal generating station on Lake Ontario) and at Nanticoke. Moreover, Hamilton harbour has some disadvantages, including high dredging costs. Interviews with the management of the steel companies confirmed the arguments outlined above: the existence of port facilities has not been a compelling reason for the steel industry remaining on Hamilton's central waterfront.<sup>8</sup>

### **Agglomeration Economies**

The role of agglomeration economies in the formation of inner city industrial complexes has long been recognised, although the precise nature of the economic advantages is often not clearly identified. The major economies are: transportation cost advantages gained by juxtaposing linked industries; improved input supply conditions, particularly in the case of unstandardised and individually negotiated inputs and outputs requiring custom work; the creation of a labour pool with specialised skills; the availability of a wide range of ancillary and support activities, including those provided by the public sector; and advantages resulting from being plugged in to the information flows for an industry where knowledge of tastes, fashions, supply and market conditions are a prerequisite if a firm is to be competitive.

It is evident that the general effect of these economies is less potent today than in the past; witness the decline of many inner city industrial complexes.<sup>9</sup> Moreover, as Scott points out, these economies are not

geographically fixed: as plants decentralise, so the agglomerative effect of the diminished pool of industries that remains is diluted.<sup>10</sup> Declining real transportation costs have likewise reduced the strength of these agglomerative effects. Besides, external economies have often been internalised as a result of the growth of firms by vertical integration.<sup>11</sup>

There is, nevertheless, an important iron and steel-making complex located in Hamilton, and Bater and Walker's linkage studies show that agglomeration economies do play a role in its existence.<sup>12</sup> This was confirmed in our 1979 interview survey: 40 out of 105 responding firms stated that localization economies associated with the steel industry complex were an important factor in their original choice of a location in the Bayfront area. Amongst the various economies listed above, all are of some importance but, equally, none appear to be vital. The fact that primary steel facilities have been located in recent years at Nanticoke suggests that physical linkages on the production side of a steel complex can now be stretched up to distances at least in the 50-100 kilometre range without incurring a serious cost penalty. Likewise a number of steel firms have decentralised their plants out of the Bayfront area. On the other hand, Dofasco has recently acquired a site adjacent to its main plant from a large paint-making firm that is decentralising. As a result, Dofasco now has the option of doubling its steel-making capacity in the Bayfront area. This suggests that significant agglomeration economies are still available. One interpretation of this conflicting evidence is that for steel makers in Hamilton, agglomeration economies and diseconomies are roughly in balance. The decisive variable that appears to govern the choice between remaining in the Bayfront area and decentralising is the availability of land.

### **The Oligopolistic Land Market**

There remains, then, the issue of land requirements, and the availability of space to expand. It is noteworthy that many studies of decentralisation based on interviews at the plant level have found lack of space to be

a decisive factor in the decision to decentralise. For instance, in his survey of firms decentralising from northwest London, Keeble found shortage of space to be by far the most important reason for moving: it was given as the main reason by 69 percent of the surveyed firms that relocated, and 72 percent of the firms setting up a branch plant.<sup>13</sup> There are two main reasons why a firm may wish to increase its production space. There is the obvious case where a simple increase in output is required. Much of the recent literature, however, focusses on the second case, where the requirement for additional space results from the process of industrial restructuring. From a geographical viewpoint, technical changes giving rise to changing factor input and space requirements are a vital part of industrial restructuring. They have certainly had an impact on a very wide range of industries. For example, Keeble reports: "Between 1960 and 1969, the area of new factory floor space actually constructed in Great Britain, relative to the work force to be employed, rose steadily year by year from 60<sup>2</sup>m per worker employed in the new factory to 70<sup>2</sup>m."<sup>14</sup>

In the case of Hamilton's steel industry, both processes operate: total iron and steel capacity in Hamilton has increased from 3 million tonnes in 1955 to close to 10 million tonnes in 1980. Simultaneously, changes in production technology have reduced manning levels and increased space requirements per unit output. Subsidiary factors such as the increased use of private cars by employees have also raised the demand for space. Very rarely can an inner city plant successively enlarge its space over a number of years. Occasionally, neighbouring land may become available at an opportune moment, but for this to be repeated for a series of expansions is most unlikely. Yet in Hamilton the two major steel makers have succeeded in doing precisely this, thereby integrating new facilities into the existing steel complex and adding to the bundle of agglomeration economies that are available. What appears to set Hamilton apart, then, has been the ability of two dominant firms located on the waterfront to expand progressively.

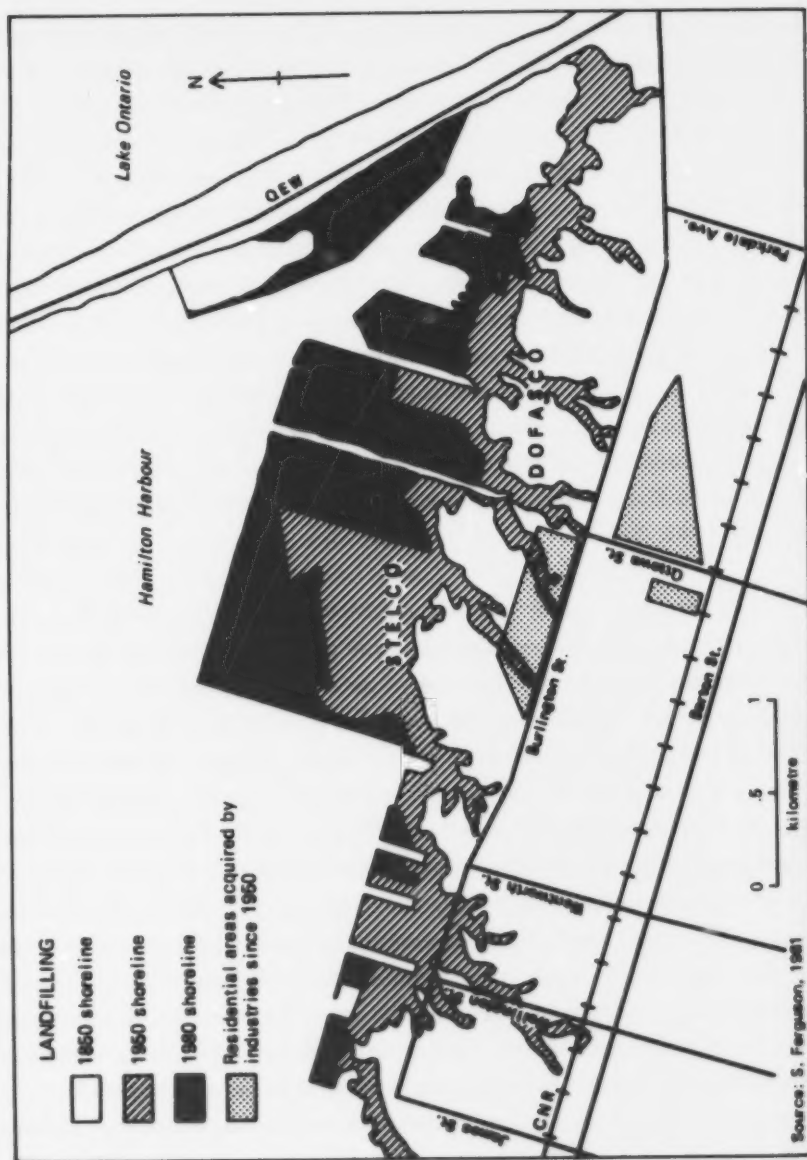
Figure 6 shows land use in the Hamilton Bayfront area in 1979. Almost 85 percent of the area is zoned for industrial uses, with 14 percent

residential and one percent recreational. Commercial uses are virtually absent. Superimposed on Figure 6 are the landholdings (in 1979) of Stelco and Dofasco, and of the Hamilton Harbour Commission.

Figure 8 shows some of the major historical land-use changes. A third of the study area has been reclaimed from Lake Ontario since 1850. Up to 1950 most of the reclamations involved shallow water lots. Reclamations were made on a small scale, and in an uncoordinated way, giving rise to an irregular shoreline that was not particularly convenient either for land users, or for marine navigation. A large-scale landfilling project was conceived in the 1950s (and implemented in the years around 1957) to straighten off the foreshore and reclaim a further 1000 acres from the harbour. The largest reclamations on what is now Piers 16 and 17 gave Stelco about 500 acres, while Dofasco gained an additional 400 acres between Piers 21 and 24.

The process whereby nearly one-fifth of the surface area of Hamilton Harbour came to be infilled—largely to the advantage of two firms—can be summarised as follows. Early reclamations which predated the imposition of planning controls were on a small scale and of an incremental nature. This changed with the creation of Hamilton Harbour Commission by Act of Parliament early in this century. Amongst the Commission's legislated powers were: control over reclamation of water lots; the right to own and lease land in the area under its jurisdiction; and the right to levy charges on ships using the harbour (this being its main source of revenue). As with many public corporations, its goals were not profit maximising. The success of the commissioners and the management had therefore to be measured in terms of the status of the port, and the most effective way of promoting this was to build up the trade of the port (and therefore the Commission's gross revenue). Thus the success of the Commission very rapidly became identified with the success of the primary steel industry which accounted for between 85 and 90 percent of the trade passing through the port. Accordingly, when the steel industry sought to expand by reclaiming water

Figure 8  
INDUSTRIAL LAND ACQUISITIONS IN HAMILTON'S BAYFRONT AREA



lots, their requests were favourably received, and in due course the large-scale harbour reclamation between Piers 16 and 24 took place. And this process of infilling continues: the East Port concept (see Figure 6) will reclaim a further 120 acres of which 40 acres was ready for servicing in March 1983.

Significant land-use changes have also occurred on the landward side. As Figure 8 shows, three formerly residential areas (amounting to some 250 acres) have been rezoned for industrial uses since 1950. In this case it was the political system that dealt favourably with requests from the two main steel makers for land rezoning. It is difficult to believe that smaller enterprises could have engineered either harbour reclamation or the rezoning of residential land on anything like the scale achieved by the two dominant firms.

### Policy Implications

High levels of unemployment, low income levels, and various associated indices of social deprivation have brought the inner city into the forefront of policy making. The solution to the inner city problem that is currently in favour in the U.S. and the U.K. is to reverse the decline in industrial employment by promoting small-scale industry in designated enterprise zones.<sup>15</sup>

The enterprise zone approach has been criticised on a number of grounds. Glickman makes four criticisms of the U.S. policy: 1) It subsidises capital inputs more than labour inputs; 2) The proposed subsidies are probably not large enough to have an appreciable impact on a massive problem; 3) Since local taxes are not a major factor in industrial location, tax savings will not attract much industry; and 4) There is no provision of venture capital for very small firms that are unable to obtain loans from the private sector.<sup>16</sup>

The findings of the Hamilton study suggest that a broader line of criticism may be developed. As Lloyd and Mason state: "It is common knowledge that larger plants (which tend to be older, mature plants) have a much higher survival rate and greater longevity than small plants".<sup>17</sup> Thus, to turn the point around, there is a higher probability of small firms failing. Moreover, those small firms that are successful will commonly decentralise as they grow to maturity, leaving the inner city no better off. Nor will successful industries that choose to remain in enterprise zones necessarily solve the major inner city problem. Many of the so-called industries are essentially warehouse and distribution operations, with only a small manufacturing component. Consequently, some of the industries locating in enterprise zones do not have the labour-intensive characteristics required to solve the unemployment problem.

The experience of Hamilton points to another policy option which, although it can be applied in only a few instances, nevertheless promises greater impact in situations where it is applicable. The option is to develop instruments which allow large firms to remain located in the inner city or, if the case arises, to locate there *de novo*. The essence of such a policy is to provide sufficient space to meet the needs of a large firm which may either be expanding, or (more commonly) needs the space to modernise the layout of its plant.

Needless to say, such an approach has certain advantages, but it also creates a whole new set of problems. On the positive side are the following advantages. The overall contribution to inner city employment is large; indeed it takes a myriad of small firms locating in the inner city to generate as much income and employment as do firms such as Stelco and Dofasco. Moreover, unlike the small firms, the large firms are more likely both to survive, and to stay put rather than relocate when the subsidies run out.

There is naturally a negative side. Chinitz's comparison of New York and Pittsburgh, led him to hypothesize that the supply schedule of

entrepreneurship would be lower in a town dominated by an oligopolistic industrial structure such as Pittsburgh, or Hamilton.<sup>18</sup> Thus, by implication, enterprise zones populated by small firms may foster a higher entrepreneurial birth rate than does an inner city dominated by a few oligopolistic firms. But in Hamilton there is scope for entrepreneurship amongst the many smaller firms that are linked to the primary metal industry, so that the full force of Chinitz's argument does not apply.

More difficult is the dilemma that to subsidise large firms in the inner city is to promote the growth of monopolies, and, in consequence, to increase the level of industrial concentration. This is, perhaps, an unavoidable consequence of the suggested policy, but as Galbraith points out, in the modern mixed economy, large corporations can be more easily directed to meet the wishes of the state than can small firms.<sup>19</sup> Thus welfare goals may be achieved more successfully when the size distribution of firms is skewed in favour of large firms. As for arguments against industrial specialisation, this depends greatly upon the type of industry being supported. At one extreme, there is little to be gained from subsidising a large sub-marginal plant in an ailing industry: promoting specialisation in such circumstances will have catastrophic consequences for the local economy when the plant finally closes. At the other extreme, polarised growth requires specialisation in one, or a few related, propulsive industries. The most likely situation lies between these two extremes: in a fairly stable industry undergoing periodic modernisation, the higher risks of specialisation may be an acceptable price to pay in return for sustaining a major source of inner city blue-collar employment.

Perhaps the most troublesome aspect of a policy promoting large firms by assisting them to meet their space requirements is that it could result in the displacement of established small firms or, even worse, established residents. The latter is unacceptable, and there is clearly a need to guarantee residents, rights *a priori*. But relocating smaller firms (with full compensation) is an entirely realistic policy option, if the resulting loss of a

few jobs in the inner city results in the retention of a large number of jobs in a large firm.

These conclusions have specific implications for Hamilton. Should the expansion of Dofasco and Stelco in the Bayfront area be encouraged, or should restrictions be placed on their further extension by means of land-use rezoning and harbour reclamation? Clearly, each expansion proposal will have its specific merits and demerits, but as a general rule it is argued here that it is in Hamilton's interest to maintain a policy of flexibility. The fortunes of the city, and of the port, are now so completely bound up with the success of the iron and steel industry that it would be unwise to block its future development. Industrial diversification in Hamilton's suburbs should indeed be encouraged, but for the Bayfront area the die has long been cast.

The more general policy implication is for governments to assist major waterfront industries to enlarge their plants so as to facilitate in situ expansion and restructuring. There are, admittedly, not too many instances where this option still exists, but to exercise it wherever possible is to promote the longstanding complementarity between the labour requirements of port area industries and the particular skills of inner city residents.

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## Chapter 6

### REGIONAL DEVELOPMENT POLICY AND PORT ACTIVITY: THE CASE OF HALIFAX-DARTMOUTH

This chapter is concerned with the role that ports play in regional development programmes. The example of Halifax-Dartmouth will be used first, because the Department of Regional Economic Expansion has been active in promoting the economy of this metropolitan region in recent years, and second, because Halifax is one of Canada's major ports.

#### The Policy Framework

Policies to develop the Atlantic provinces have varied with time and place. Two of the major strategies applied in the mid-1970s are stated in the Subsidiary Agreement between the federal government and the province of Nova Scotia. The first was to concentrate growth in Greater Halifax about which, it was hoped, growth effects would spread. Thus:

It is essential ... that the rapid rate of development and growth of the metro area be sustained, not only to ensure continued prosperity for the residents of Halifax-Dartmouth, but more importantly to ensure the generation of the maximum possible benefits for the remaining parts of Nova Scotia and the Atlantic Region.<sup>1</sup>

Having focussed development efforts on Halifax-Dartmouth, the second major strategy of the Subsidiary Agreement was to promote various developments within the metropolitan area, including port-related activities. For instance, it is stated:

...perhaps the key potential development opportunity remains the Halifax container port and associated "spin-off" activities.<sup>2</sup>

More commonly, it has been suggested that not just the container port, but a broad range of port-related and marine industries could assume a leading role in the future development of the Halifax-Dartmouth region.

The first of these two strategies, that of polarised growth, has been debated elsewhere and will not be discussed here.<sup>3</sup> This paper will critically assess that part of the second strategy which sees considerable development potential in a policy promoting port activities and port-related industries in Halifax-Dartmouth.

### **The Port of Halifax**

The recent history of the port of Halifax has been somewhat checkered. In the postwar period the general cargo trade passing through the port declined, and it functioned mainly as a winter outport of Montreal. In 1966, when augmented ice breaking opened the St. Lawrence ports to winter season navigation, the general cargo trade declined even further, until the container terminal was opened in 1969.<sup>4</sup> Since then the volume of general cargo passing through the port has increased roughly fivefold to nearly 3 million tonnes per year, and the port as a whole has experienced a modest revival.

The port of Halifax currently ranks amongst Canada's ten leading ports in terms of tonnage handled and, after Montreal, stands second (a little ahead of Saint John), as a general east coast port. It is an important bulk cargo port, handling large volumes of oil, gypsum and wheat. Until 1981 it vied with Montreal for first place as a container port in Canada and still occupies second place.<sup>5</sup> It also handles fairly large volumes of break-bulk general cargo. A greater number of imported cars are handled at the harbour's Autoport than at any other single car facility in Canada. Halifax is also a naval port, with the headquarters of the Commander of Maritime Command, the Department of National Defence's major east coast dockyard and the Canadian Coast Guard's main Atlantic station. Related organisations, such as the Bedford Institute of Oceanography (which claims to be the world's second largest centre for marine studies) and the Nova Scotia Nautical Institute, are further indicators of the importance of the port.

## The Current Status of Industry in the Halifax Region

The recent resurgence of trade through the port of Halifax has not been accompanied by a corresponding overall expansion of employment in port-related activities; indeed employment in several of these activities has actually declined. As will become evident, activities not related to the port have been the main source of industrial growth in the 1970s.

The largest marine-related establishment is the Department of National Defence Dockyard. In postwar years its operations have been scaled down and it now has approximately 1,800 civilian and 5,000 military employees. Like most defence establishments, it is relatively self-contained: running repairs to naval vessels are generally done within the dockyard. Operating details are not public information, but fragmentary evidence suggests that the main local impact is the service multiplier associated with consumer expenditures by employees, plus a certain amount of local subcontracting. At present, only a small amount of fleet repair work is done at the neighbouring Halifax Shipyard. Furthermore, although a \$250 million programme to modernise the Dockyard is in the offing, much of this expenditure will be on sophisticated equipment which will not be manufactured locally.

Halifax Industries Limited, which is the largest marine-related business outside the Dockyard, operates Halifax Shipyard and the Dartmouth Marine Slips. In March 1979 it had a total of 550 employees evenly divided between the two yards. The Dartmouth facility repairs smaller vessels in the 100-3,000 ton range, and this activity is likely to continue in years to come. The recent history of Halifax Shipyard has been much more volatile, with employment declining in the last decade from a high of 1,400 employees. In the 1960s the previous owners (Hawker Siddeley) gambled on breaking into the new market for construction of offshore oil-drilling rigs. Almost a dozen rigs were built in the 1960s and 1970s, but the ship repair side of the yard gradually declined, so that by 1978 "the physical condition

of the yard was such to prohibit the yard from realizing much more than 20 percent of its capability as a ship repair facility.<sup>6</sup> The company incurred substantial losses constructing drilling rigs, and eventually Hawker Siddeley decided to cut its losses by selling out in August 1978 to a consortium, including the Dutch marine conglomerate Rhine-Schelde-Verolme (RSV), CN Marine, and Hall Corporation Shipping (Halco Inc.). There is one other smaller ship-repairing firm (Purdy Bros.) with 40 employees in their marine division.

The largest single element in the recent growth of the port is the container traffic moving through Halifax International Container Terminal.<sup>7</sup> The impact of Halterm is described in glowing terms in the 1975 Subsidiary Agreement.

The impact of the container port, built in 1969, on the economy of Halifax-Dartmouth and of the province has been most impressive. Today there are 250 people employed on the container pier and another 250 working on the waterfront at container port-related activities, i.e., pilots, tugs, etc. Given a multiplier of 4, over 1,000 jobs have been created by the container port.<sup>8</sup>

However, from a different perspective, it can be argued that the local impact of the terminal is surprisingly small. With a capital cost of \$23 million, one direct job was created for every \$100,000 invested. Aside from the jobs on the waterfront related to Halterm, other spin-offs include the equivalent of about 50 jobs in trucking, and 15 jobs in a small container-repair operation.

The key point is that the success of a container terminal in a peripheral port is dependent, in part, upon it not having a big employment impact. The container terminal had to be built if Halifax wished to recapture general cargo traffic from Montreal, but this involved creating a capital-intensive operation.<sup>9</sup> Moreover, the creation of a total of around 1,000 jobs by a facility handling 225,000 containers and 2.3 million tonnes of container cargo in 1979 suggests a remarkably small employment impact, given the fact that from initial fabrication to final sales the goods moved in the containers account for thousands of jobs.<sup>10</sup>

The impact on the provincial economy is difficult to assess. In 1976, forty Nova Scotian firms used Halterm, of which 10 shipped more than 100 containers a year.<sup>11</sup> They accounted for about 9 percent of the total container traffic. Many of the activities concerned, such as exporting blueberries, apples, fish products and wood pulp, and importing Volvo components and sub-assemblies, and wines and spirits for the Nova Scotia Liquor Commission, predated the construction of the terminal. Halterm has improved the competitive position of several local industries so that fish and apples are now exported in refrigerated containers and blueberries are, for the first time, being exported to Europe and Japan. Regular liner services simplify the operating logistics of Volvo, and of the large Michelin Tyre plants in Bridgewater and Granton. On the other hand, not all of the growth in these industries should be attributed to Halterm. The fishing industry, for instance, was expanding rapidly in the late 1970s throughout the Atlantic provinces, mainly in response to the 200-mile fishing limit. In short, the container facility is a useful additional advantage for some local industries, but there is little evidence to date to suggest that a large number of new jobs have been created in these industries by it, or by the second container terminal in Fairview Cove.

The three main bulk cargoes handled at Halifax are wheat, gypsum, and oil being delivered to the two refineries in Dartmouth. In toto the three bulk terminals and the two oil refineries account for less than 500 jobs, which averages one job for every 16,000 tonnes of cargo shipped annually. This is a far cry from the labour-intensive port operations of yesteryear.

The two major vehicle-related industries in the port of Halifax are the Volvo assembly plant and Autoport. Volvo has assembled cars in Halifax since 1963, with volume increasing from 16 cars a day to the present level of 36. Car assembly is a fairly labour-intensive operation, and this plant accounts for 165 jobs. There are few local inter-industry multiplier effects because nearly all the parts are imported from Sweden through Halterm's Roll-on, Roll-off facility. Autoport occupies a 97-acre site in Eastern

Passage. A small amount of value is added to vehicles, but the fact that well over 100,000 vehicles are handled each year by a work force of a little over 100 people is indicative of the small value-added component. Autoport clearly requires a port location: the specific site in Eastern Passage was selected because of the combination of a deepwater berth adjacent to a railway line, and a vacant 97-acre site, but it generates only a small amount of direct employment within the local economy.

In addition to these port-related industries, the port itself creates employment. The general cargo operations, plus the half dozen stevedoring contractors operating in the port of Halifax (excluding Halterm and Fairview Cove) have around 630 longshoremen on their books. A further 320 are registered as freight handlers, employed on a casual basis for the discharge and loading of railcar traffic at the port.

Excluding the Naval Dockyard, employment in waterfront industries accounts for approximately 2,500 jobs, which is less than one might expect for Canada's third or fourth ranking general port. Moreover, outside the tertiary sector there is little evidence of strong multiplier effects on the regional economy. In rough-and-ready terms, the Naval Dockyard is twice as important as a direct employer as all the other waterfront industries combined, and is by far the single most important element in the economic base of Halifax. The essence of a modern port operation is to move goods from land to sea transportation, or vice versa, with minimal delay. Efficient intermodal transfer requires heavy investment in capital equipment but generates relatively few jobs. Little of the capital equipment is manufactured in Nova Scotia, hence the local multiplier effect from investment in equipment is also small.

If the Naval Dockyard is excluded, then the largest amount of industrial employment in Halifax-Dartmouth is found not in waterfront establishments, but in the four industrial estates located elsewhere in the metropolitan area, namely the Burnside, Commodore, Woodside and

Lakeside Estates. By 1978, the 560 firms in these industrial estates accounted for some 5,500 jobs, double the number of jobs in waterfront establishments (excluding the Dockyard). Roughly 70 percent of these firms are warehousing and distribution establishments, the remaining 30 percent being engaged in manufacturing. Surveys indicate that only a small proportion of the firms are "port-oriented."<sup>12</sup>

### **Future Prospects for Industry in the Halifax Region**

There are currently a number of proposals for the industrial development of the Halifax region. The likely impact on the regional economy of the four most important of the proposed developments will be assessed. All four relate, either directly or indirectly, to the role of Halifax-Dartmouth as a major east coast port.

#### **a) The Second Container Terminal**

The first stage of Halifax's second container terminal located in Fairview Cove commenced operation in 1981. It comprises one deepwater berth and a 50-acre container-sorting and storage yard (there is space for up to three more berths). Estimates of the construction cost are put at \$31 million; the operator (Ceres Corporation Inc. of Chicago) invested about \$10 million in equipment. Construction expenditures provided total household income benefits in the Halifax region of \$34.6 million spread over a three-year period.<sup>13</sup>

The long-term impact of the new terminal is not likely to be different from that of Halterm. Some new container traffic may possibly be attracted to the port, generating direct employment in the new terminal, in piloting, tug services, ships provisioning, bunkering, and in land transportation. Additional employment will be created in industries handling neo-bulk commodities; in particular it is expected that imported structural steel will become the basis of a small-scale steel fabrication industry. However, judging by past experience it is unlikely that the addition of the new

container terminal will, of itself, attract much new manufacturing to the Halifax-Dartmouth area, nor is it likely to trigger major expansion programmes within existing firms. The main impact of the new terminal will be to facilitate the speedy movement of containers between Central Canada and overseas markets and suppliers.

#### b) Revitalisation of Halifax Shipyard

The new owners of the Halifax Shipyard have proposed a programme to revitalise the yard, in two stages. The first stage will cost \$12 million as follows: \$6.5 million to rehabilitate the yard, and \$5.5 million for an "interim" floating dry dock in the 25,000 tonnes deadweight class, to become operational in 1979. A provincial grant was made in 1978 to purchase the dry dock. This first stage, which will create around 200 additional jobs, is designed to recapture the shipbuilding and ship repair business lost during the decade when operations were focussed on oil rig construction.

The second stage is intended to capture a new class of business. It comprises a \$7 million building and retooling programme, coupled with the purchase of a second, much larger floating dry dock. With a \$6 million loan from the provincial government toward the cost of this new building programme, the shipyard was able to apply for DREE grants which effectively wrote off 25 percent of the provincial loan. The second floating dry dock (which was delivered to Halifax Shipyard in November 1982) is of Panamax size, that is, a dock capable of repairing ships up to the maximum size passing through the Panama Canal (up to 85,000 tonnes deadweight). If the Panamax operation is successful, a further 500 or more jobs will be created at a cost of around \$50 million. The rationale for this stage-two expansion is similar to that used to justify the construction of Halterm. Halifax is located only 20 miles from the major North Atlantic shipping lanes which hug the Nova Scotia coast following the great circle route between the U.S. eastern seaboard and western Europe.<sup>14</sup> Nearly two thousand vessels use that shipping lane each year, of which 10 percent are "callers," the other 90 percent "passers." Hence vessels could stop in for repairs without going more than a few miles out of their way.

There are four reasons why this development seems promising: it builds upon one of the few locational advantages of the area; it creates jobs in an activity in which there is considerable local skill; for as long as the Canadian dollar remains well below par with the U.S. dollar, Halifax will have labour cost advantage over American ports; and the consortium that owns the yard is well placed to direct work to the yard (CN Marine and Hall Shipping both own fleets, while RSV has expertise in marketing and production technology). In short, this proposal has the merit of expanding one of the few activities in which Halifax appears to have a comparative advantage. However, on the other side of the coin, the adoption of a 200-mile fishing limit has reduced the number of foreign fishing vessels needing repair work.

#### c) Oceanside Industrial Park

Although heralded as a new idea, the possibility of promoting research and development in marine-related industries in Halifax has been mooted for at least a decade. Oceanside Industrial Park, with an estimated price tag of \$7 million, was announced in February 1979. It is funded through a DREE subsidiary agreement on the basis of an 80-20 split, with the federal government contributing the larger share. It occupies a 100-acre waterfront site adjacent to the existing Woodside Park. The land is currently owned by Industrial Estates Limited and includes a pier and the shell of the long-closed Acadia Sugar Refinery. The construction of an "incubator mall" which can be leased in accordance with clients' needs, with a common office facility and a machine shop, is planned.

The high-technology industries that the government hopes to attract to the park will serve the needs of the Department of National Defence, the deep-sea marine industry, the oil and gas exploration industry off the Newfoundland-Labrador coast and in the high Arctic, and the fishing industry. The last of these is expected to be the most important; indeed the consensus of opinion in provincial government circles is that the 200-mile fishing limit was the main stimulus for growth in the Nova Scotian economy

in the four years up to 1982. It also has the advantage of a metropolitan location offering a wide range of support facilities and services. Expressions of interest, for instance, by a firm which makes submersibles and diving gear for repairing oil rigs, indicate that there is some demand for such a development. Total employment in the park will probably not be large (unless export markets are developed) but it will consist mainly of highly paid skilled occupations for graduates of the various universities and polytechnical institutes in the Halifax region, and it is consistent with the emphasis on research and development in major Canadian industries being argued by the Science Council of Canada.<sup>15</sup>

#### d) The Gateway Concept

Besides the three quite specific developments discussed above, a number of other concepts have been advocated. Two of these - the land-bridge concept, and the freeport proposal - are considered by this author to be not very promising at the present time. The land-bridge concept sees Canadian surface transportation carrying cargoes between Japan and Western Europe, with Halifax and Vancouver at each end of the land bridge. With present shipping costs making it cheaper to ship most cargoes via the Panama Canal, with transportation costs shifting in favour of the marine mode, and with a land bridge in the U.S. about 1,000 miles shorter, this concept does not appear to be viable. The freeport proposal has problems for rather different reasons. It could be argued that Halifax already is a freeport in the sense that a duty drawback is given to manufacturers exporting goods using imported inputs. The problem is that any further concessions and incentives may lead to accusations of dumping, particularly from U.S. manufacturers.

The gateway concept, in contrast, is considered in some circles to be quite realistic. It is described in enthusiastic terms in the 1975 Subsidiary Agreement:

Because of its favourable location on the north Atlantic trading routes, Halifax-Dartmouth may have a unique viable opportunity to create from 1,000-35,000 jobs as a transshipment and ware-

housing centre for goods and products imported into North America from Europe, Africa and western Asia, and vice versa... The scheme would call for construction of giant warehouses to house the goods and the related control systems and hardware. The Halifax-Dartmouth Metropolitan Area could become a centre of expertise in container traffic management...The feasibility studies included in this Agreement under the program "The Gateway: The Port" are a necessary step towards development of this opportunity.<sup>16</sup>

Interestingly, the feasibility study called for in the agreement was much less enthusiastic about the viability of the proposal. It states: "Our principal conclusion is that under present conditions it is highly unlikely that an effort to make Halifax a major gateway for North America, on the scale envisioned...would succeed."<sup>17</sup> Halifax is seen to have a number of advantages for this gateway role: the port is 600 miles closer to Europe than is New York; there is ample space for expansion in the port; government incentives are available; there is an efficient container terminal and a second one now in operation; there is an underutilised but experienced labour force; and there are good intermodal connections, especially with rail to Central Canada.

Against these advantages the consultants set seven disadvantages, as follows: the complex administrative structure of the port of Halifax; the lack of scheduled air cargo flights from Halifax Airport, and of common carrier marine feeder service between Halifax and ports on the U.S. eastern seaboard; Halifax's cost disadvantage over New York and Baltimore in the U.S. midwestern service and its inferior connections - particularly rail links - with the same midwestern region; Halifax's low labour productivity so that (based on 1972 data) manufacturing costs are about 15 percent higher than in five U.S. cities with which Halifax might compete; and finally, U.S. pressure groups would apply political pressure to prevent the gateway from capturing the U.S. midwest market.

These perceived disadvantages warrant comment. Although the port involves many jurisdictions, interlocking management and cross-appointment of board members results in a fair degree of coordination of effort. The

lack of scheduled air cargo and common carrier feeder services raises a chicken and egg argument: it is not unreasonable to assume that a successful gateway facility would lead to the provision of these support services; indeed a feeder service is apparently imminent. The argument concerning low labour productivity is not convincing. It is not valid to apply historic productivity performance data to the future development of an activity not even represented. The cost disadvantage vis-a-vis New York is partly cancelled out by the shorter sea voyage to Halifax.

The two remaining arguments are far more convincing. Inferior rail connections to the U.S. midwest are not easily remedied. Indeed one is inclined to argue that if Canadian and U.S. railways started actively competing for gateway markets, Conrail could probably attract Ontario's trade to the port of New York (thus depriving Halifax of much of its existing gateway traffic) more easily than CN could attract the U.S. midwest traffic to Halifax. Also, the lobbying power of transport interests in the U.S. is a very potent factor.

There remains the more modest version of the gateway concept, with Halifax capturing most of Central Canada's trade. For political and economic reasons, this also is most unlikely, for it would imply Halifax taking over much of the traffic passing through Saint John, Quebec City and Montreal.<sup>18</sup> Moreover, there is little evidence of existing shippers wanting to open containers at a warehouse operation near Halifax for sorting, storing and re-shipping. On the contrary, the aim is to avoid double handling by loading boxes onto railcars and moving them to Central Canada unopened and with minimal delay. Moreover, opening containers would probably prevent a shipper gaining the advantage of Ocean Conference lines absorbing the rail cost to Montreal.

Having expressed grave doubts about the viability of the proposed gateway concept, it is important to stress that from this author's point of view, Halifax already plays an important gateway role, and that much of

Halifax-Dartmouth's existing industry is associated with this role. However, this role is not related to the seaport function per se. Halifax is Central Canada's gateway to the Nova Scotian market and, to a lesser extent, to the Atlantic provinces market as a whole. Much of the activity in the existing industrial estates of Greater Halifax is branch plant manufacturing and warehousing, serving the regional market in true gateway fashion.

### **Implications for Halifax**

Halifax's recent revival as a general cargo port has very little to do with the generation of traffic by local industry, but has a great deal to do with changing technological and economic circumstances which now direct a substantial amount of the traffic between Central Canada and overseas through the port. Unlike the old break-bulk traffic, the new traffic is moved through a highly mechanised system, which creates comparatively few jobs in the metropolitan area.<sup>19</sup> Bulk cargo handling is also capital intensive. It would appear, therefore, that policies which focus on port-related developments may not be as effective in solving the key regional problem of high unemployment as would a policy emphasising other types of industry.

However, this is not true of all port-related industries. Of the four developments discussed above, two fall in this category. The new container terminal has operating characteristics similar to Halterm. Indeed if new container traffic is not attracted to the port, this activity will be over-capitalised. The gateway proposal is not considered to be viable, and even if it succeeded it too would be a capital-intensive operation. The proposals for an R and D Oceanside Industrial Park and to expand ship repairing are exceptional amongst modern port-related industries in that they are labour intensive. Thus, if market conditions are favourable, these proposals should generate more employment per dollar invested than would most other port-related activities.

In recent years new industrial employment in Halifax-Dartmouth has mainly been located not on the waterfront, but in the industrial estates. With a few exceptions, these establishments are not port-related, but are operations (often branch plants or warehouses) serving the regional market. To the extent that the creation of productive employment is a key priority, then future industrial policies should be at least as concerned with promoting these activities as with promoting the somewhat more visible port-related industries along the waterfront.

### **Implications for Regional Policy**

The main conclusion to be drawn from the foregoing discussion concerns the impact of the benefits resulting from port improvements. These benefits are no longer concentrated in the local economy; they tend to be quite widely diffused. There are exceptions to this rule, particularly where a port is built specifically to serve major industrial establishments such as wood processing plants in ports along the British Columbia coast. But more generally, the beneficial effects resulting from port improvements are not nowadays concentrated in the local community: indeed, in some instances, the long-term local impact is surprisingly small.

The case of Halifax-Dartmouth illustrates this point. A parallel example is the Ridley Island Project, now being developed at Prince Rupert in Northern British Columbia. The main purpose of this development is to provide an alternative west coast port to Vancouver for the Prairie wheat trade, and to export coal and timber from the northern interior of British Columbia. The construction phase of Ridley Island will have a short-term local impact, but the long-term local impact, like that of many of the recent developments in Halifax-Dartmouth, will not be strong. It will create remarkably few new jobs in a highly capital-intensive operation. It is for this reason that, as a general rule, port developments no longer provide a very useful approach to regional employment policy.

### Footnotes

1. Department of Regional Economic Expansion, Subsidiary Agreement Canada/Nova Scotia: Metropolitan Halifax/Dartmouth Area Redevelopment (Ottawa: Government Printer, 1975), p. 20.
2. Ibid., p. 28.
3. For example, see H.W. Richardson, "Growth Centres, Rural Development, and National Urban Policy," International Regional Science Review, 3 (1978), pp. 133-152.
4. Iain Wallace, "Containerization at Canadian Ports," Annals of the Association of American Geographers, 65 (1975), p. 436.
5. Montreal took a clear lead in 1980 when CP Shipping shifted their container operation from Quebec City to Montreal. A year later, the leading container company using Halifax, Dart Container Line, shifted its Halifax operation to CP's Racine Terminal in Montreal: this was a severe blow to the port of Halifax (depriving the port of one-third of its container traffic), but it was partly compensated by Atlantic Container Line moving its operation from Montreal to Halifax in late 1982. Halifax may lose more container trade if ZIM discontinues its feeder service based in Halifax.
6. Halifax Industries Limited, Business Plan (Halifax, January 1979), p.3.
7. Halterm is jointly owned by Canadian National Railways, Newfoundland Capital Corporation, and Halicon. Eighty percent of the stock of Halicon is owned by the province of Nova Scotia, 20 percent by the City of Halifax. Besides a one-third interest in Halterm, Halicon promotes Halifax as a container port.

8. Department of Regional Economic Expansion, Subsidiary Agreement, op. cit., note 1, p. 28.
9. See, for instance: Marine Transportation Policy Project, "The Rationalization of Intermodal Technology in Canadian Ports," Marine Transportation Policy Project Final Report (Toronto: University of Toronto/York University Joint Program in Transportation, Research Report No. 48), pp. 241-272.
10. A recent study of manpower on the Halifax waterfront shows that despite the substantial growth of general cargo traffic, longshore employment was estimated to decline from 692 in 1971 to 535 in 1976, a net loss of 157 jobs; see J. Dougall et al., Manpower on the Halifax Waterfront: Projections of Demand, Supply and Training Needs (Halifax: Dalhousie University, Institute of Public Affairs, Occasional Paper 1, 1974).
11. Peat, Marwick and Partners, Halifax Containerport Economic Evaluation (Halifax: June 1976, IV-18).
12. Canplan Consultants Limited, Burnside Industrial Park Study (Halifax: July 1973).
13. Peat, Parwick and Partners, op. cit., note 11.
14. Halifax Industries Limited, Business Plan, op. cit., note 6, p. 101.
15. J.N.H. Britton and J.M. Gilmour, The Weakest Link: A Technological Perspective on Canadian Industrial Underdevelopment (Ottawa: Science Council of Canada, Background Study 43, 1978).
16. Department of Regional Economic Expansion, Subsidiary Agreement, op. cit., note 1, p. 30.

17. Arthur D. Little Incorporated, Feasibility of Developing a Transportation Gateway for North America in Halifax (Halifax: January 1978 with addendum to May 1978, p. 3).
18. R.A. Ffrench, "Competition Among Selected Eastern Canadian Ports for Foreign Cargoes," Journal of Maritime Policy Management, 6 (1979), pp. 5-13.
19. G.B. Norcliffe, "Industrial Development and Port Activity in Halifax-Dartmouth," Canadian Public Policy, 6 (1980), pp. 533-541. See also, K.M. Rupenthal, "The Direct Impact of Ports and Airports on Industrial Development," in Ports and Airports, Trevor D. Heaver (ed.) (Vancouver: Faculty of Commerce and Business Administration, University of British Columbia, 1970), pp. 43-49.



## Chapter 7

### MAJOR CONCLUSIONS

Port and shipping systems are very susceptible to change. For instance, in 1981 Dart Container Line restructured their Canadian container operation by replacing the current drop-off in Halifax using large vessels en route to New York with a direct service from Europe to Montreal using smaller vessels. This one shift placed Montreal beyond dispute as Canada's leading container port. It follows that the subset of port industries that are associated with these particular trades are equally susceptible to sudden changes.

Conversely, patterns of shipping may also be altered suddenly in response to changes in industrial location. For example, Gulf Oil mothballed its refinery at Point Tupper in March 1981, thereby reducing this facility to being a distribution centre for the Atlantic provinces. As a result, shipping at Port Hawkesbury has been considerably reduced.

Not all industries located in port areas are liable to such sudden changes. Port-related industries requiring heavy capital investment in plant or infrastructure seem thereby to gain a degree of locational inertia. As a group, newer port-area industries that are not generally port users, but which are part of an emerging system of urban-industrial location, also show a degree of stability. At least in this group, locational changes are largely independent of changes in patterns of shipping.

It is abundantly clear, however, that overall, industry located in Canadian ports has undergone sufficient change in recent years that any conclusions about specific ports or specific industries are likely to be outdated quite quickly. Besides, the approach pursued in this essay has been to identify the fundamental processes at work, and examine their effects in

particular instances. Accordingly, the six major conclusions presented below are concerned with re-stating these broad processes, to which specific industrial changes in specific ports may be related.

**1. Port industries no longer dominate the central waterfront.**

The historical juxtaposition of ports and industry on the central waterfront has, to a large degree, broken down. The outstanding exception is Hamilton, where two major steelmakers still dominate the Bayfront area: this is attributed mainly to the influence these two firms have exerted on an oligopolistic land market. Elsewhere, port-related industries have tended to move either to suburban port locations or to greenfield sites. As a consequence, port industries have become relatively minor land users on the central waterfront, and are no longer a major source of employment in the inner city.

**2. Most port industries have become space extensive.**

Port activities and port industries have experienced a substantial increase in their space requirements in recent years. Due to their limited back-up space, finger piers have become obsolescent for general cargo purposes, and in most instances have been replaced either by break-bulk terminals with substantial warehouse space, or by container terminals with even larger storage space. Many storage operations have likewise experienced a need for greater space as the scale of operations and size of shipment has increased. Some of the consequences of these changes are to be found in:

- 1) the construction and probable expansion of the Roberts Bank coal terminal south of Vancouver;
- 2) the expansion of port-related activity along the Fraser River downriver from New Westminster;
- 3) the diffusion of activity from Central Vancouver to various waterfront locations around Burrard Inlet and the Fraser River;
- 4) the proposed \$400m coal-grain terminal on Ridley Island in Prince Rupert;

- 5) the development of the outer harbour in Victoria;
- 6) the new 23-acre McKellar Island coal terminals for Alberta coal in Thunder Bay;
- 7) Stelco's new steel plant in Nanticoke;
- 8) the general movement of activity downriver in Montreal;
- 9) the new port at Bécancour;
- 10) the proposed superport at Gros Cacouna on the Lower St. Lawrence;
- 11) the creation of a "superport" at Point Tupper in the Canso Strait;
- 12) the shift of activity from Halifax's central waterfront to Dartmouth and various points around the Bedford Basin.

### 3. Most port industries have become more capital intensive.

The technological changes that have affected port activities and port industries have generally led to the substitution of capital for labour. Capital inputs have increased in several ways:

- 1) the greater use of space (identified above) which represents a substantial capital cost;
- 2) mechanisation of systems for loading and unloading vessels;
- 3) mechanisation of industrial processes;
- 4) larger scale of operation which involves larger inventories and greater amounts of capital locked up in inventory (both of inputs and products).

In general, the cost of capital inputs (particularly land) is lower in the suburbs; indeed relocation to suburban and greenfield port locations is one manifestation of a more pervasive process of industrial decentralisation that is underway in most Western cities.

### 4. Non-industrial land uses now dominate the central waterfront.

As port-related activities and industries have deserted the central waterfront, so there has been increasing pressure from other land users to possess these same sites. Institutional, commercial, residential and

recreational uses have become well established on the urban waterfront in recent years. Institutional uses include law courts (such as in Halifax), government offices, Toronto's Harbourfront, and facilities for particular groups such as retirees. Commercial uses are varied, but many are geared to serving tourists (especially in Victoria and Halifax). Waterfront hotels are now in evidence in most old port areas. Residential uses are of two main kinds: public housing, and prestige apartment blocks. Finally, there are varied recreational facilities that meet the demands of an increasingly affluent society which can allocate a considerable amount of time to leisure pursuits. Amongst this last group of activities, marinas are invariably the most visible.

**5. New kinds of industries have become prominent in old port areas.**

Not only have non-industrial land uses crept into the central waterfront, so too have new kinds of industries that are not directly related to the port. By and large these tend to locate not on the very central part of the waterfront (which tends increasingly to be monopolised by prestige activities), but on lands a little removed from this fulcrum. Generally speaking, three new kinds of industry are evident. First, there are industries serving the inner city which, for various reasons, need to be located in close proximity to their market. Second, there are noxious industries that have been segregated from residential and commercial areas. And third, there are some labour-intensive industries that are attracted by relatively low-cost manual labour living in inner city residential areas.

**6. Ports now offer only limited opportunities in regional development policy.**

Because of the weakening association between ports and industry, ports do not present the same opportunities for regional development policy that they have in the past. The creation of a port handling huge volumes of bulk commodities does not necessarily present many employment opportunities. Indeed, the ports of Sept Iles, Roberts Bank, Thunder Bay and Port Cartier generate remarkably little local employment and income, especially in light of the huge volumes of bulk goods passing through the ports. A

useful indicator is the new port at Port Hawkesbury which has not contributed greatly to solving the economic problems of Cape Breton Island; likewise the revitalisation of the port of Halifax in recent years has not been a major factor in the growth of that metropolitan area. One suspects that proposed developments at Prince Rupert and Gros Cacouna, if implemented, will have a similarly small impact on their local economies once the construction phase is complete. Broadly speaking, the implication is that the provision of port facilities (which is a form of infrastructure provision) is not in itself likely to contribute a great deal to solving the problems of Canada's depressed regions: concentrating on primary or secondary industries is more likely to yield the desired results.



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Appendix  
**PROJECT SUMMARY**

**PERSONNEL**

|                     |                    |
|---------------------|--------------------|
| Project Director    | Dr. G.B. Norcliffe |
| Research Assistants | Philip Ainlay      |
|                     | Scott Ferguson     |
|                     | James Randall      |

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- G.B. Norcliffe (1979) "The Changing Role of Port Industries," presented at Annual Meeting, Canadian Association of Geographers, University of Victoria, May.

- G.B. Norcliffe (1979) "Processes Affecting Port Industrial Development in Canada" (UK), Social Science Research Council's Anglo-French Symposium on Seaport Industrialization at the University of Southampton, England, November.
- G.B. Norcliffe (1982) "A Reassessment of Canadian Port Industries," Invited Lecture, Centre for Canadian Studies, University of Edinburgh, February.

### THESES

- Philip Ainlay (1978). "Locational Analysis of Waterfront Industries in Toronto." B.A. Dissertation, Department of Geography, York University.
- Scott Ferguson (1981). "Port Manufacturing: A Study of Hamilton's Bayfront Industrial Area." M.A. Thesis, Department of Geography, York University.
- James Randall (1981). "Port Influences and the Decentralisation of Industry on the Fraser River, Metropolitan Vancouver." M.A. Thesis, Department of Geography, York University.

### FIELD WORK

- Philip Ainlay      Port of Toronto, May - August 1978.
- Scott Ferguson    Port of Hamilton, May - August 1979.
- James Randall    Port of Vancouver and Fraser River, July - August 1979,  
June - July 1980
- G.B. Norcliffe    Port of Halifax, February 1979  
Port of Victoria, May 1979  
Port of Vancouver, May 1979  
Port of Hamilton, July 1979  
Port of Toronto, various times

